The Iron Age

A Review of the Hardware and Metal Trades.

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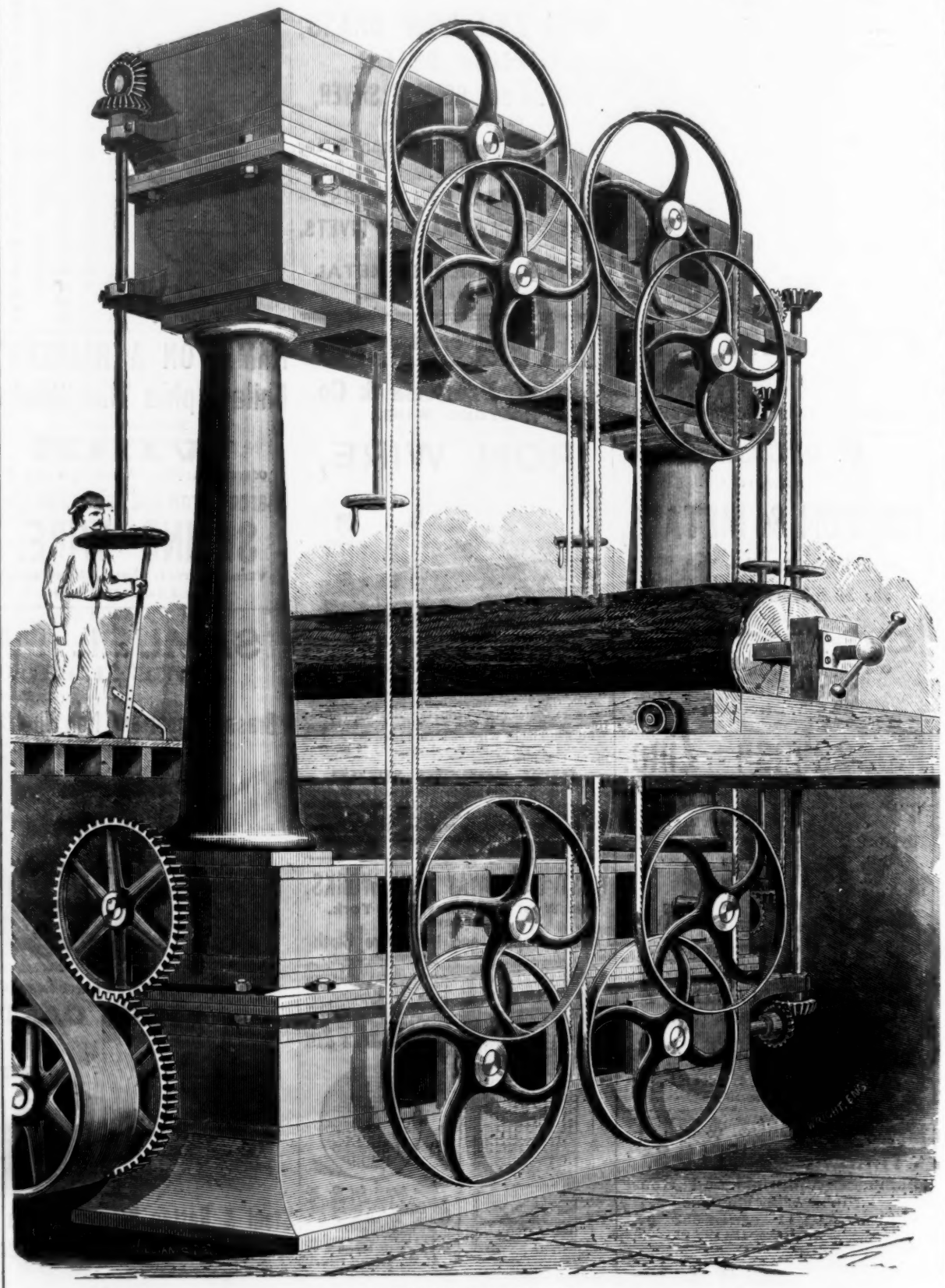
Sillman's Gang Band Saw Mill.

We present herewith an illustration of an important novelty in saw mill machinery, which is so well shown as to require but brief description. The invention, for which Mr. H. Sillman, of Brooklyn, holds the patent, consists in the arrangement in juxtaposition with each other, of sets or series of band saws, and in the combination of shafts with the upper and lower journal boxes of the pairs of pulleys or wheels of opposite saws, to each shaft, having a right-hand thread on one half, and a left-hand thread on the other half, intermediate shafts connecting each pair of screw shafts by suitable beveled gears, whereby the saws of the several pairs may be uniformly adjusted laterally, either toward or from each other.

Journal boxes composed of two parts are used, one capable of sliding vertically within the other. A screw passes through the vertically sliding part, and impinging against the bottom of the other part, is operated by a worm gear. This mechanism is controlled, and the tension of the saws adjusted from the sides of the machine, by means of a hand wheel, shown at the left of the engraving. The adjustment for thicknesses of lumber is effected by horizontal shafts above and below, previously referred to, which have right and left screws cut upon them, and which are simultaneously operated by means of two vertical shafts, shown at the right of the engraving. The right and left hand screws respectively pass through sliding blocks which carry the bearings of the saw pulleys. Their operation, therefore, is to separate or bring nearer together the band saws, while, at the same time, the blades are kept parallel with each other.

The practicability of cutting lumber with band saws has already been fully demonstrated. The only drawback has been, that the band saw mill could not turn out the same amount of work in a given time as the circular saw mill or gangs of reciprocating saws. With band saws used in gangs, as herein described, this objection will be removed, and a great saving of lumber effected.

A very important application of the invention will be the cutting of stone, the metal bands being armed with borts or black diamonds. The employment of borts in connection with metallic bands has, we understand, been successfully begun by a company in Newark, N. J., a patent having been recently obtained on a method of attaching diamonds to metallic bands, by Mr. Herbert Cottrell, of that city.



SILLMAN'S GANG BAND SAW MILL.

Molecular Changes in Iron.

The following article from the *Engineer*, relating to a subject already discussed at great length, and by writers of eminent ability in these columns, will be read with interest:

MOLECULAR CHANGES IN IRON.

Professor Thurston has contributed to *The Iron Age* a paper on "The molecular changes wrought in iron by changes of temperature," which is distinguished at once by great research and clearness of statement and deduction; indeed, in saying only this we fear we do him but scant justice, for it has seldom fallen to our lot to find in a comparatively short treatise such an amount of information, the correctness of which is guaranteed by references almost innumerable to the authorities from whom it is derived. The importance of the subject itself, in the abstract, will be readily recognized by engineers, for whether we look upon iron in a static condition, as a material of construction, or to its use in machinery, we cannot fail to see the great value which attaches to distinct and reliable definitions of the changes produced in it by variations of temperature, or, indeed, by any other changes of physical conditions. Professor Thurston's treatise commences with a statement of the most generally accepted views of the molecular constitution of matter, which is well worth attention, but which we are from want of space compelled to pass over, and we proceed at once to consider the changes in metals, more especially in iron, at different degrees of temperature. Referring to the change in iron from the liquid condition through the pasty, semi-fluid, welding state, to that of comparative brittleness at ordinary temperatures, the professor say: "It would be anticipated that it might continue with still further decline in temperature," and that "it would not appear unlikely such change might progress indefinitely, or until resilience were absolutely destroyed by the approximation of molecules, and the coincident fixity due to a maximum intensity of polarity." And on this head he points to the opinions of Tredgold and Dr. John Percy, the former of whom thought that any increase of temperature would diminish the tenacity of metals, whilst the latter holds contrary views, basing his belief upon the fact that accidents from fracture are of more frequent occurrence in cold than in warm weather. A very important error, and one, we think, of not unfrequent occurrence, is here remarked upon, viz., the common attempt to estimate the strength of materials by experiments in which they are tested by *shock*; for it is evident that although a material may be immensely strong, and yet if brittle—non-resilient—it may be readily broken by a blow which would not injure a less tenacious but more ductile specimen. In this opinion we fully concur, as also in the statement that "change of temperature may, while producing an alteration in the cohesion of metal, effect a directly opposite change in its ductility, and that consequently the substance may exhibit greater tenacity, and may, therefore, better resist a steady strain, while at the same time its ductility may be so greatly increased by the same cause as to greatly lessen its resilience, and thus, though stronger, it may be less capable of resisting shocks."

It may be well, just at this point, to relate a matter which came under our own personal experience with reference to the effect of low temperatures on wrought iron. A quantity of small guide mill iron ⅝ in. by ½ in. was to be used as cramps, thus, ⌐——⌐ for railway bar piles. It was delivered to the purchasers somewhere about the middle of winter, and during a season of very severe frost. In a very few days complaints were received that the iron would not bear bending, and that hence it was utterly useless for the purpose intended. Examination proved that the complaint was well founded. The cramp irons actually would not bend, but snapped off at a blow of the hammer like so many glass rods. Unable to gainsay the complaint, the forge manager was applied to for some explanation, and he quietly took half a dozen of the bars, and laying them down on the warm flooring plates in front of a reheating furnace, allowed them to remain there something like three-quarters of an hour, at the expiration of which time no difficulty whatever was found in bending them to the right angles required. Now, this appears to us a direct contradiction to the conclusions arrived at by Mr. Styffe, the director of the Royal Technological Institute, of Stockholm, and quoted by Professor Thurston, "that the modulus of elasticity in both steel and iron is increased on reduction of temperature and diminished on elevation of temperature." Nor would the further opinion enunciated by the experimenter, viz., that the causes of breakage of rails in cold weather, and of articles made of iron and steel, is "unequal expansion and contraction and the rigidity of supports," in any way apply to the case in point. Again, Sandberg, as quoted in the treatise under notice, appears to have doubted—as we do ourselves—whether the reasons just given were the sole ones why metals should break more readily in cold than in hot weather, and his experiments—some twenty in number—resulted in the following conclusions, amongst others: First, that for such iron as is usually employed for rails in the three principal rail making countries—Wales, France, and Belgium—the breaking strain, as tested by sudden blows or shocks, is considerably influenced by cold; such iron exhibiting at 10 deg. Fah. only from one-third to one-fourth of the strength which it possesses at 84 deg. Fah.; Secondly, that the ductility and flexibility of such iron is also much affected by cold, rails broken at 10 deg. Fah. showing on an average a permanent deflection of less than 1 in., whilst the other halves of the same rails, broken at 84 deg. Fah., showed a set of more than 4 in. before fracture; Thirdly, that at summer heat the strength of Aberdare rails was 20 per cent. greater than that of the Creusot rails, but that in winter the latter were 20 per cent. stronger than the former; and he—Mr. Sandberg—further suggests that this considerable decrease of toughness at low temperatures may be due to "cold shortness" produced by the presence of phosphorus.

Now, are we to assume from these statements that there is in both cast and wrought iron a tide of molecular movement which is constantly, as it were, ebbing and flowing with the alternations of temperature. Mr. David Kirkaldy's experiments go almost to prove that such is the case, for he says: "The breaking strain is reduced when the iron is frozen; with the strain gradually applied the difference between a frozen and an unfrozen bolt is lessened as the iron is warmed by the drawing out of the specimen;" and hence, then, as we take it, the application of heat produces to a certain extent a greater degree of molecular cohesion. Mr. William Brockbank states that in experiments made on cast iron of the different qualities of Cleator red hematite, Pontypool and Blaenavon cold blast, and Glengarnock hot blast irons with scrap added, he found a perceptible decrease of strength with decrease of temperature; and he noted beside a similar effect where wrought iron was tried. Against this may be placed the experiments of Mr. Peter Spence, who has "No hesitation in giving, as an ascertained law, that a specimen of cast iron, having at 70 deg. Fah. a given power of resistance to transverse strain, will on its temperature being reduced to 0 deg. have that power increased 3 per cent.

It appears, however, to be definitely certain that there is a continual molecular change going on at all times and at all temperatures in both cast and wrought iron, and on this head may be instanced the gain in strength of cast iron ordnance as it grows older, and the recovery of temper and endurance of edge noticeable in chisels and similar tools after any lengthened period of disuse and exposure to atmospheric influences. Against the very theory which Professor Thurston seems inclined to support, viz., that cold, or rather absence of caloric, decreases the strength of iron, the experiments of Mr. W. H. Johnson, which are quoted in the paper before us, may also be adduced. By these it was found that immersion in acid diminishes the breaking strain of iron wire from ⅛ per cent. to 3 per cent., and of steel wire about 4·76 per cent.; and, further, that immersion in acid appears, in some cases, to diminish, and in others slightly to augment, the elongation of iron wire, and also to augment the elongation of steel wire about 30 per cent. But, in both instances, heat restored to the iron its original toughness. This is surely not a confirmation of the idea that a lowering of temperature increases the strength of iron. One more example. Mr. Oliver Williams says, of two specimens of rail iron from different bars, but both made at Catasauqua, Pennsylvania: "These specimens were first nicked with a cleft on one side only, and then broken under a hammer at a temperature of 20 deg. Fah. At this temperature both specimens broke off short, showing a clearly defined granular and steely vein feature. The pieces were then gradually heated to about 75 deg. Fah., and then broken, as before, developing a fine, clear, fibrous grain. The two fractures were but four inches apart, and are entirely different." We apprehend that nothing can be more conclusive than such an experiment as this, and yet in the conclusions drawn by Professor Thurston we find the following: "That at the absolute zero (—461·2 Fah.) cohesion, and consequently the strength of the material, have their maximum value, heat energy having disappeared."

We believe, however, with the author of this treatise that there is yet a large field unexplored, in which experiments as to the molecular changes of iron at different temperatures may be very profitably carried out. Our own opinion, however, is, and certainly our practical experience confirms it in almost every instance, that any temperature below 32 deg. Fah. tends to decrease the strength of both wrought and cast iron That the ratio of this decrease is altered by and depends on the quality of the metal, we readily concede, and we venture so far as to say that in all probability different portions of the same bar and different pieces of the same pig or casting possess different degrees of strength and resilience. In fact, every different morsel of iron has a different strength, which varies directly or inversely, as the case may be, with the alterations of temperature, but to say that at temperatures below 72 deg. Fah. the tenacity of iron increases with the diminishing temperature at a rate of about 0·03 per cent. to 0·03 per cent. for each degree of Fah., is certainly not in accordance with our belief or experience.

A New Blast Furnace in Philadelphia.—A new era in Philadelphia enterprise was started about a week ago, by the putting in operation of Robbins & Sons' new blast furnace, at Beach and Vienna streets. This furnace was planned, and its erection superintended, by the well-known firm of Taws & Hartman of this city. The furnace is fourteen feet diameter of bosh, sixty feet high, and is fitted out with all the modern improvements which have been found of real value by practical furnace men. This is the first blast furnace erected within the limits of this city, and is regarded as a monument to the pluck and energy of its owners, to whom we wish all success. Mr. Stephen Robbins has invented a slag granulator which he uses in connection with Luhrmann's closed front, and which is erected in good style and works well. The furnace started off finely, and is now in successful operation.—*Bulletin of The Iron and Steel Association.*

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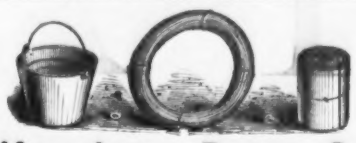

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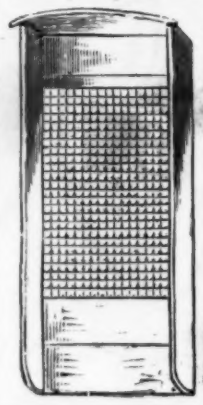

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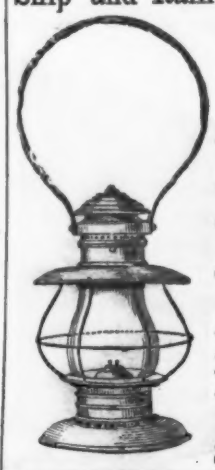

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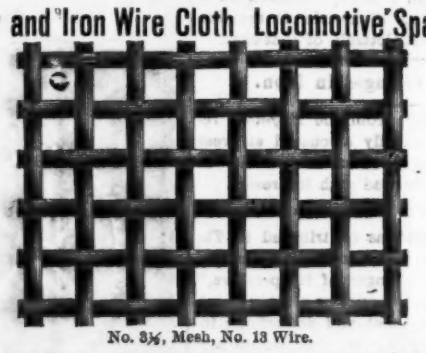

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10	3.47	40	11	3.20	38	12	2.80	35	14	2.43	33	16	2.00	30	18	1.39	30
11	2.75	32	12	2.45	31	13	2.15	30	15	1.97	30	17	1.47	25	19	1.08	25
12	2.10	26	13	1.85	25	14	1.62	25	16	1.51	25	18	1.11	20	20	0.76	20
13	1.62	22	14	1.41	20	15	1.31	21	17	1.10	20	19	0.85	18			

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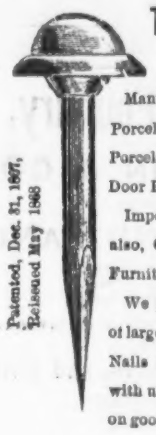

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October 15, 1873.

Fire-Proof Flooring and Fire-Proof Construction.*

BY LEWIS HORNBLOWER.

The question of fire-proof flooring and fire-proof construction generally has for a long time occupied my attention, and was brought more forcibly to my mind by the gigantic fires that have occurred, not only in America, but in our own country. The loss of life, to say nothing of the loss of property, has been enormous, and the insurance offices have suffered considerably. I find, from a return made to the Board of Trade for the year 1871, that the losses of thirty-five insurance companies amounted in that year alone to the enormous sum of £2,197,004. 14/3, and this fearful loss has occurred notwithstanding all the advantages of the so-called fire-proof construction at present in practical use.

All descriptions of supposed fire-proof construction hitherto invented have miserably failed; iron girders and iron columns supporting brick vaulting have alike proved ineffective, and when subjected to great heat have collapsed. The only structures that have successfully resisted the most intense fires, and remained firm and rigid during their continuance, have been floors of brick, stone, or tile carried on brick vaulting, supported on brick piers. This method of construction has great disadvantages, from the great amount of space occupied by the brick piers. The desideratum to be aimed at is the construction of a perfectly fire-proof floor capable of covering a large area unsupported by columns and girders of iron, which, at the same time, must possess carrying power to sustain heavy loads of merchandise, and also admit of carrying fire-proof division walls for separating the rooms on the upper stories of large public buildings, as, for instance, hotels, hospitals, private houses, etc.

Seeing, from the mass of evidence produced, that iron and stone constructions are not fire-proof, and not to be depended upon, I directed my attention to a combination of fire-clay tiles and Portland cement concrete. It was necessary in this combination to use some small portion of iron as a tie, but I have used as little of this material as possible, and have placed it in such a position that no fire can touch it, or if it did, the effect would be harmless.

The object and scope of the invention is to provide walls, partitions, floors, and roofs of buildings at once light, cheap, durable, thoroughly fire-proof, and convenint for ventilating the rooms or spaces they enclose. For these purposes I employ the materials hereafter named, in combination, for walls, partitions, floors, and roofs: iron or steel, hollow earthenware, and cement concrete; and for partitions, under a modification—iron or steel, metal wire, earthenware pipes, and cement concrete.

Walls, partitions, floors and roofs are constructed of sheet iron or steel, preferably so formed as to represent one-half of an octagonal honeycomb cell in transverse section, reversed and placed as flitches parallel to each other, with a space of 6 inches between the flitches. In this space are placed pipes of hollow earthenware, with the sides splaying outward at the base to form a skewback. These pipes are in 2 feet lengths, and the iron flitches are bolted to and through the earthenware pipes, thus forming a composite girder. These girders are placed 2 feet from center to center at the proposed ceiling hight, having 4½-inch wall-hold at each end. A rough staging is required by way of support on which to lay the floors; between each skewback an earthenware hollow pipe—with oval-shaped head and flat soffit, with a dovetailed channel or indentation running longitudinally to receive plaster or ceiling—is placed, with sufficient room left between the composite girders to receive the charge of cement concrete. This is filled in from the upper side, and well consolidated. The upper surface of floor is truly levelled and grouted with pure cement grout, and brought to a fair and smooth surface, if intended to form a finished floor; but if tiles, marble, flooring boards, or parquetry, are proposed to be used for finishing flooring, the concrete is simply leveled and left rough to receive the battens to which the boarded floors are nailed.

Holes are left in the soffits of the hollow pipes, where requisite, for ventilating the rooms below, and the pipes so utilized are connected with flues in the walls adjoining; or if it is desired, in these days of dear coal, to economize fuel, hot air may be conveyed, by means of these hollow tubes, from any central and convenient point in the basement, where a heating apparatus may be located, to any room throughout the building thus constructed.

In walls and partitions the iron and steel lengths are placed in a vertical, in floors in a horizontal, and in roofs in an angular position.

Partitions are constructed of half-octagonal honeycomb iron or steel cells, with metal wire stretched across, instead of laths, to receive the cement concrete or plaster, such wire serving to tie the iron and steel lengths, and at the same time to hold and strengthen the cement concrete or plaster. It will be obvious that bricks, flooring boards, tiles, marble, or other material or desired surfaces, may be attached to parts constructed in accordance with my invention, whether for floors, walls, ceilings, or roofs. I am satisfied that this is the only really fire-proof construction now before the public, and by far the cheapest.

In consequence of the extraordinary advance in the price of iron, I have been compelled, in order to keep down the cost of the floor, to economize in the use of wrought iron in its construction. I can now construct a floor without the octagonal iron flitches, simply by forming the composite girders separately, before fixing, by running a ⅝ or larger diameter wrought-iron rod or bar, with nuts, head, and screws, through the center of the hollow tiles, and charging the interior with fine cement concrete, gauged 4 to 1, and screwing the whole together, thus making a continuous beam and skewbacks to receive the hollow oval earthenware centers, which, in fact, throw the whole construction into a series of small arches, supported on composite girders, bound into a homogeneous mass by the cement concrete.

This mode of construction has many advantages for cottages either built separately (self-contained) or in accordance with the Scotch plan, where a number of dwellings are collected in flats, having access from a general staircase. It is cleanly, harbors no vermin, commands a ready means of ventilation—so necessary to the health and comfort of all, and so often unattainable by the poor—and would not entail constant repairing.

This construction would be of immense importance if used in the erection of hospitals, dispensaries, barracks, cotton manufactories, breweries, railway stations, warehouses, drying sheds, malt rooms, etc. It would be very valuable if used in the construction of floors over lock-up shops—so common in London, and in which, unhappily, so many fires have occurred, caused, I am informed by the police, in too many cases, by fraudulent tradesmen who purposely set fire to their shops to rob the insurance companies, without any consideration for the unfortunate families that may be living above them. One great commendation is that it is cheap, and can be constructed by any laborer of ordinary intelligence.

Great care must be taken in thoroughly incorporating and amalgamating the material forming the concrete together—old bricks, broken small enough to pass through an inch mesh, well-washed gravel and sand. Furnace slag, broken as before described, makes an excellent material to mix with the Portland cement to form the concrete. The proportions should be accurately measured; six, and (if the ballast is sharp and good) sometimes seven, of the materials above mentioned to one of the best double-tested Portland cement, carefully turned over twice while in a dry state, and well mixed. Too much water is fatal to the setting qualities of the concrete, because, when applied too copiously, it only washes away the cement from the mass; just sufficient water should be used to temper the whole, and the best mode of application is by a rose waterpot. The concrete should not be made in greater quantities than can be readily carried to the floors and used before it commences to set. In forming the floors this fact must be strongly borne in mind. The floors must not be constructed in layers, but the full thickness must be put in in one body; therefore no more should be attempted at once than can be satisfactorily completed the same day. When the floor has set for a fortnight the platform may be struck, but as the material gains strength daily until crystallization is complete, the floors should not be too heavily taxed at first.

The partitions, I am satisfied, would be very valuable if used instead of the stiled partitions, so generally used now to divide the rooms on upper floors—in fact nearly all the internal divisions of London houses are simply constructions of timber. The weight of the partitions could be suspended by tension rods from the floors above, thus dividing the weight throughout the structure.

For cottages and smaller houses, partitions of 4 in. and even 3 in. thick would be ample. I embed the metal uprights in concrete, passing the rods through the pipes, as before described.

In addition to the flooring, I have invented a very simple method of rendering iron columns and girders already erected in buildings perfectly fire-proof, by means of a ring of fire-clay tubes attached to the periphery of the columns and soffits and sides of the girders, securely bound together and attached to the iron by Portland cement concrete, which allows of a free current of air between the iron and the external facing of concrete. This casing adds only 2 in. to the thickness of the ring of the metal column.

I have had an opportunity of testing this practically and thoroughly in numerous buildings lately erected by me on this principle in Cumberland, for the Directors of the Hodbarrow Mining Company. The spans I have covered have been 14 ft., but I can readily, and should not hesitate to, carry a floor over a span of 22 or 24 ft., without any support than that derived from the walls themselves, by increasing the depth of the composite girders. These houses, 58 in number, in which I am introducing my patent flooring, are to be seen at Haverigg, in Cumberland. The material that is used for floors and roofs is simply sea-beach shingle combined with Portland cement. In the construction of the walls I have used the proportion of 8 of shingle to 1 cement, and for the floors 6 to 1 of the same materials respectively, but am satisfied that in the larger proportion of 8 to 1 it would be equally satisfactory.

Concrete walls (and I speak from actual experience) of 9 in. in thickness, will bear as much as any 14 in. walls built of brick. It is superior in many respects; it is impervious to water, and the walls can be built by any ordinary laborer, under proper supervision.

The weight of the floor is 6 cwt. to the yard superficial, but this may be made less by reducing the depth of concrete on the floor. This invention is as useful for roofs as floors, it being only necessary to give a slight shedding toward the gutters. A good deal, however, depends upon the genuineness of the cement used; it must be equal in quality and well tested as to strength.

I think I may safely lay claim to the following advantages embraced in my invention:

1st. Great cheapness.

2d. Large carrying power.

3d. Less iron (and that carefully protected) being used in the construction, and the other materials used being perfectly uninflammable, its fire-proof qualities must necessarily be superior to those of any other flooring.

4th. In ordinary fire-proof floorings columns and girders of iron have to be used, placed at intervals varying from 8 ft. to 12 ft. apart, and these are totally unprotected from the action of fire. In this flooring, even for heavy warehouses, girders would be required 15 ft. or 16 ft. apart, and columns 20 ft. distance, and these are carefully encased with fire-proof material; thus, not only saving a large amount of expense in girders and columns, but giving the floors, even in the hottest fires, by calculation, at least six hours' grace (as compared with ordinary uncased columns and girders) before the columns would become red hot; then, when water is played upon them, the casing would protect the columns and girders from the unerring action of the contact of the two elements, and enable them to cool down gradually.

5th. No ceiling joists or laths are required, the soffits of the fire-clay tubes being grooved and dovetailed to form key for plaster.

6th. The excellent opportunity given, where the floor is used, of conveying hot air to, or foul air from, the various apartments in which it is laid by means of the hollow fire-clay tubes; and this is of greater importance to the householder since the great advance in the price of fuel, for here a great economy can be effected.

7th. In this construction I can obtain no perceptible lateral thrust—the strain is entirely vertical.

8th. No harbor for vermin.

9th. No counterceiling required.

10th. The boarded floors need not be laid until all the plastering is finished.

*A paper read before the Liverpool Architectural Society.

Important Sale of Coal Lands.—The Mauch Chunk *Coal Gazette*, of the 19th inst., says: "For several months rumors have been circulated to the effect that the Central Railroad of New Jersey were negotiating with the Lehigh Coal and Navigation Company for the sale or lease of their valuable coal property. Of late these reports were more industriously circulated, and early last week there was a perceptible movement upward in Navigation stock. On Thursday it was announced that the Lehigh Coal and Navigation had sold all their Newport and Hanover coal lands and their leases at Plymouth to the Honey Brook Coal Company, which is controlled by the Central Railroad. We are not able to give the figures officially, but we are reliably informed that $4,750,000 is the price paid. This sum will pay the floating debt of the company, and leave a large enough surplus in the treasury to pay a ten per cent. dividend next May. Some six thousand acres in fee of coal lands are included in the purchase, to say nothing of the Plymouth property. Owing to the fact that the Central Railroad of New Jersey has the best facilities for carrying coal from the Wyoming region, this transaction will prove a most valuable one to the company. It gives them full control of the transportation of an immense quantity of coal from the mines to the tide, and they will also make a handsome profit as miners. The Honey Brook Coal Company, which has become one of the great mining companies by this transaction, has heretofore had its headquarters at Audenried, in this county, where it has several slopes and a large vein of excellent coal. Mr. E. F. Leisenring, the son of Judge Leisenring, is the superintendent at Audenried. The Honey Brook has been one of the most successful of companies, partly because of its good coal, and partly because it has always been well managed. The Lehigh Coal and Navigation Company stock advanced rapidly from 28 to 36½ on account of the sale. There are rumors that the company intend leasing their Summit Hill works, but the report was not confirmed upon inquiry at the offices."

The following are the principal dimensions of the steamships Pennsylvania, Ohio, Indiana and Illinois, of the American Steamship Line: The vessels are exactly alike in every particular. Length over all, 355 feet; length from forward part of stem to stern-post, 343 feet; from forward part of stem to propeller, 336 feet; beam, extreme, 43 feet; depth of hold from top of floors to top of spar deck, 32 feet 6 inches; hold, molded, from spar deck stringer-plate to top of keel, 33 feet 6 inches; depth of floor plates, 2 feet; hold, from top of floors to top of lower deck, 16 feet 8 inches; from top of lower deck to top of middle deck, 8 feet 4 inches; from top of middle deck to top of spar deck, 7 feet 6 inches; from top of keel to top of spar deck, 34 feet 6 inches; tonnage, O. M., 3016; capacity of bunkers, 720 tons. Cargo space—middle between decks, 65,101 cubic feet, at 40 cubic feet per ton, 1627 tons; after hold, 24,107 cubic feet, 602 tons; forward, 42,082 cubic feet, 1052 tons; upper between decks, 22,946 cubic feet, 573 tons; total, 154,236 cubic feet, 3854 tons. Capacity for a cargo of compressed cotton, at 30 cubic feet per bale, 5134 bales. The draft will not exceed 20 feet 6 inches in fresh water, with coal bunkers full, and [illegible] weight cargo of 1740 tons (2240 lb.) or a measurement cargo of 3854 tons (40 cubic feet). Also a full complement of saloon and steerage passengers, officers and crew, all necessary stores and outfit on board.

Mr. Baher, British Inspector of Factories, mentions in his report, recently issued, that gas engines are coming into use in various trades, particularly for small letter press printers and riband weavers. It is a cheap and easily applied motive power, whenever a solid foundation for the engine can be obtained. In the neighborhood of Coventry, he observes, steam power forming a considerable element of expense in the weaving of ribands, the gas engine has been applied to do the work of boys of thirteen or fourteen years of age, who used to turn the machinery, and the invention is acceptable, as relieving labor of some part of its fatigue.

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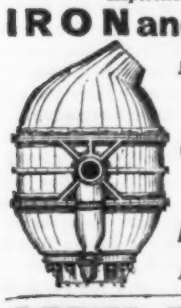
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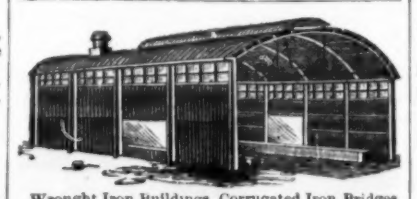
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SECOND FLOOR

The Robinson System of Electric Railway Signaling.

Within a few years several systems of electric railway signals have been brought out in the United States. The chief features of these systems are that a train, in passing a particular point, operates an electric circuit, and thus exposes a signal in a signal house by the roadside. This signal remaining exposed until the train has reached a point a mile, more or less, beyond, when it again actuates the circuit, and the signal is thereby withdrawn. The main circuit in all these systems is a line wire, and they are technically known, therefore, as "wire systems" to distinguish them from the "rail system" of signaling which we illustrate herewith.

For nearly seven years Prof. Wm. Robinson, formerly of Brooklyn, has made a special study of electric railway signaling, and during that time has labored to overcome the objections usually urged against such systems, which may be enumerated as follows:

First—Granting the signal to be in perfect working order, a train passes on the section, and sets the signal at danger; if, while within the section the train breaks in two—a very common occurrence—and the locomotive passes on over the reversing device, it thus reverses the signal and shows "all clear" behind the portion of the train remaining on the section. Thus, a following train is lured on to collision, and the possible destruction of both trains, by a false signal.

Secondly—The train may enter from the opposite end or from a siding and thus block the section without affecting the signal. Thus the signal shows "all clear" again while the track is blocked.

Thirdly—If the battery is too long neglected or gives out from other cause, or if a line wire is accidentally broken, or the circuits are tampered with, the signal commonly shows "all clear" whether there is danger or not, since the signal is brought to "danger" by the electric current, and not mechanically. To sum up—the signal *may* and *will*, under certain circumstances, show "safety" when the danger actually exists which the signal is designed to avert. Thus, instead of preventing accident, it may, if relied upon, become a trap and a snare.

Mr. Robinson early recognized these as faults inseparable from wire systems of signaling, and accordingly entered upon the development of an entirely new system, which should be absolutely free from all the above objections. This new system he perfected some time since. It is extremely simple, and as it has never heretofore been illustrated, the description we give of it will, doubtless, prove of much interest to railroad men not already acquainted with it.

Its *modus operandi* will be understood from the following

DESCRIPTION OF DIAGRAM.

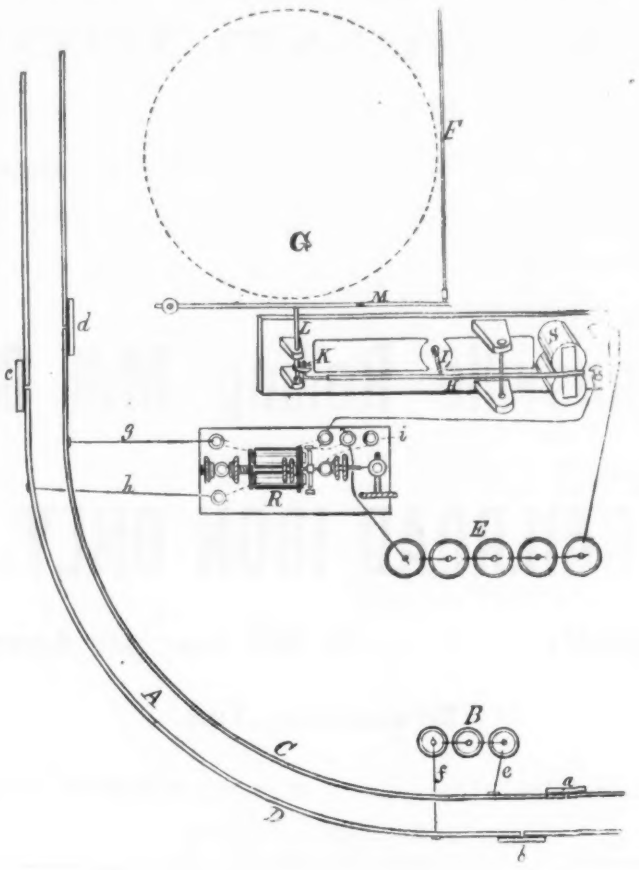
A represents a section of railroad track which may be a mile or several miles in length, each rail line of which has metallic continuity throughout the length of the section. The section of track A is separated from metallic contact with adjacent sections by the wooden joint blocks *a, b, c, d*. At one end of the section A is placed the battery B, having its opposite poles connected by the wires *e, f*, to the opposite rail lines C, D. In like manner the relay magnet R has its coils connected to the rail lines C, D, by the wires *g, h*; thus there is a complete metallic circuit from the battery B, through the wires *e, f*, rail lines C, D, wires *g, h*, and the coils of the magnet R. The latter thus remains magnetized, keeping the circuit through the battery E and signal magnet S, closed. The signal magnet S thus remaining magnetized, holds the signal banner F in a position of concealment with its plane parallel to the track, as shown in the diagram. When, however, a train enters upon the section A from either end, or from a siding, the wheels and axles bridge over between the rail lines C, D, and, by reason of their mass and consequent superior conductivety, they short-circuit the current from the rail battery B; the current, thus intercepted, forsakes the small wire of the magnet R, which, being thus demagnetized, releases its armature and opens the circuit of the battery E and signal magnet S. The latter, releasing its armature, the spring I swings the armature lever H in a horizontal plane. The lever H gears into a slotted crank K, which is fixed to the vertical shaft L, which latter carries the banner bearing cross arm M. Thus, when the spring I acts upon the lever H, the shaft L is thereby turned one-fourth around, the cross arm M describes an angle of 90 degrees in a horizontal plane, and the banner F is thereby swung in front of the orifice G of the signal house, covering the same. Thus the signal remains exposed, while a train or a car remains on the section A. As soon, however, as the section is cleared, the magnet R is instantly remagnetized, the signal circuit closed, and the banner withdrawn to the position shown.

Incidentally this signal is a

BROKEN RAIL DETECTOR.

If one of the rail lines, C, D, is broken by the tearing up or breaking of a rail or disconnecting of a joint, the rail circuit to the magnet, B, is interrupted, the current from the rail battery grounded, and the magnet, R, demagnetized, and signal exposed, as already explained. The signal may also be operated from any office within the section, either by disconnecting one of the battery wires, *e, f*, or by connecting two wires from the rails, C, D, by means of a key. It is also operated by turning any switch which happens to be within the section. When desired, one or more secondary signals, thrown either forward or back of the primary signal, are operated. In this case a single line wire is used, which is connected to the third local post, *i*, of the relay, and to the primary signal, in such a manner that it is impossible for the secondary signal to be shown unless the primary signal is first exposed. The primary signal battery, E, is used to operate the secondary signals, whether audible or visual.

This system has received a long and thorough test on the Philadelphia and Erie Railway, and is pronounced entirely satisfactory by the principal officers of that road. Trains on the P. & E. R. R. are regularly run by these signals, under the rule that when a signal appears against a train speed must be reduced so that the train can be brought to a dead stop in going a distance of one hundred feet. One of the signals on that road was twice reported out of order by a careless operator because the alarm near his office had been ringing for several hours. The Superintendent of Signals immediately investigated, and reported on both occasions that "the section men had the rails torn up in putting in new frogs, that the signal showed the danger, and was working just as it ought to." At another point—a dangerous curve—two disastrous collisions were confessedly prevented within a few weeks of each other by one of the signals. At a third, a freight train entered upon a section and set the signal. While on the section the wheel broke, wrecking several cars and tearing up the track. The signal remained exposed and the bells ringing at either end of the section, not only until the wreck was cleared away, but until the rails were replaced and connected, when the signal, having accomplished its work, instantly disappeared, and the bells ceased ringing.



ROBINSON'S ELECTRIC RAILWAY SIGNAL.

It will be observed, regarding this system, that if the signal gets out of order by neglect of battery, or the accidental or mischievous interference with connections, the signal, being mechanically exposed, goes to "danger," so that any possible error will be on the side of safety. It is impossible to show safety when the danger exists which the signal is designed to avert.

BATTERY.

Mr. Robinson has a peculiar method of setting up and using the battery, so that although used in a closed circuit system, the battery will endure longer and with less consumption of material than it does in practice in any open circuit system. One of the batteries on the P. & E. R. R. was used on a signal for ninety-four days constantly without any attention except the addition, on two occasions, of a little water to make up for evaporation. At the end of that time it was in good working order, but it was found necessary to remove it to winter quarters.

Experience proves that the working of these signals is not affected by heavy rain, snow, slush or changes in the weather. One of them may be seen at the present time in regular operation over a two mile section of rails, near Paschall Station, four miles from Philadelphia, on the Philadelphia, Wilmington and Baltimore Railroad.

It is essential to the successful working of the system that the rails should be connected by first-class fish joints. The use, therefore, of these signals is evidence of a good track. Many of the roads in this country are very deficient in this respect, and cannot, therefore, successfully use the signals.

The system was patented by Mr. Robinson in France, on February 29, 1872; in the United States, August 20, 1872, and in other countries at various times. We shall be pleased to give our readers any further information in our possession in answer to letters of inquiry.

The New Alloy—Phosphor-Bronze.

The result of three years' experiment, on the part of certain manufacturers in Europe, of the use of the phosphor-bronze, which contains 85 per cent. of copper, tends to affix a high value to this alloy. In the instances referred to it has been used to much advantage for the great bearings of the plates in general rolling mills, and for conical gearing in universal rolling mills, in cases where the rollers weighed five tons. It was found that the gear, when made of hard cast iron, broke frequently; this was replaced by wheels of ordinary bronze, and then by those of phosphor bronze. The duration of ordinary bronze wheels did not exceed, on an average, five months, while those made of phosphor-bronze wore for about nine months. This material has also been applied with great advantage not only in the making of pinions, but in the driving axles of mills; in the latter case the superiority seeming to depend not on the hardness, but on the very great resistance of the alloy, the arbors in the phosphor-bronze twisting much less than those made of forged iron, and not being liable to break like those of cast iron. To give an idea of what is thought of it by the judges at the Vienna Exposition, we may remark that it obtained the following awards: in Group I. for cog-wheels, tuyeres, and bearings, the Diploma of Merit; in Group VII, for revolvers and parts of harness, the Medal of Progress; and in Group XII, for its application to guns and other war material, the Medal of Merit.

The value of phosphor-bronze as a metal is retained indefinitely, for, unlike other alloys, it can be remelted without any material loss or alteration of its quality; while heavy steel castings, on the other hand, when worn out or broken, are comparatively worthless. A great variety of objects hitherto worked in iron and steel may now be cast in phosphor-bronze; and in many cases they require only a polish to make them ready for use; beside which they possess the merit of not corroding, as articles of iron or steel do. Its great fluidity, compactness, and fine grain, as also its beautiful color, especially recommend it for decorative art, and the perfection of the castings greatly reduces the cost of chasing and finishing. The phospor-bronze alloys, made for rolling, drawing, or embossing, will stretch more than copper, or any of its ordinary compounds. Plates have been reduced, by a single cold rolling, to one-fifth of their thickness, the edges remaining perfectly sound and without crack. Another advantage of phosphor-bronze is its incapacity of emitting sparks. Tools, knives, scissors, and other articles, such as locks, keys, &c., have therefore already been largely adopted by gunpowder manufacturers.

As a material for ordnance it is also attaining a position of first importance. The Prussian government lately ordered a series of experiments to be made on phosphor-bronze, to determine its resistance to breaking under various strains. The first bar of phosphor-bronze fixed on the stretching machine was tried by pulls of ten tons per square inch, and resisted 408,230 pulls, whilst a bar of ordinary bronze broke before even the strain of ten tons per square inch had been attained. A second bar of phosphor-bronze withstood 147,850 pulls of twelve and a half tons per square inch. Still more favorable results have been obtained on a machine by which the test bar was repeatedly bent, as often as 40,000 times per day. Phospor-bronze resisted 862,980 bends of ten tons per square inch. Best gun metal broke after 102,650 bends of the same force. Another bar of phospor-bronze is being tested, and has withstood, up to the present time, 1,260,000 bends of nine tons force per square inch. Several governments have experimented on the use of the alloy for making cannons. Without any exception, the result showed a much greater resisting power over that possessed by ordinary bronze. In Prussia it was shown, in firing with the regulation charges, and diminishing at each fifty shots, the exterior diameter of the chamber, that the phosphor-bronze cannons changed their dimensions only when the thickness of the metal was below that of the dimension of a cannon of the same calibre of steel. The Belgian government has adopted the phosphor-bronze for small arms, and for the harness buckles of all the cavalry. The extensive manufacture of this new alloy affords a new and important use for copper.—*Metal Worker.*

We are informed that one of the large manufacturers of Troy has lately shipped an invoice of stoves to China.

Action of Water upon Lead Pipes.

BY CHARLES W. VINCENT.

In most great towns the water, after it passes from the mains of the water companies, is distributed to, and through, the houses of the inhabitants in lead pipes. Every now and then some wiseacre, who has learnt enough chemistry to know that plumbic oxide is sometimes formed by the action of water on lead, creates a panic in the mind of the public by pointing out this important fact. A great fuss is then made, and a great deal is said about the danger of this poison being overlooked until too late, from its being introduced into the human system in almost imperceptible quantities, there to accumulate until fatal consequences to health and strength are produced. Experiments are thereupon immediately directed to be made by the professional chemist of the locality, who accordingly proceeds to plunge pieces of pure lead and lead-piping into the waters accused, into distilled water, fresh rain water, well water, &c. The results to be expected are well known, and have been well known at least for the last fifty years. The distilled water attacks and dissolves the lead with very great rapidity, rain water not quite so rapidly; the well water but seldom attacks it at all, and the river water, if it has traveled through any considerable distance, never. Few people have had long experience of a country district without meeting with more or less of such a panic; but that Paris, one of the most scientific of cities, and better supplied with chemists than perhaps any in the world, should have been frightened by such a silly outcry, is certainly matter for astonishment. It is, however, true. Paris has lately had her equanimity very greatly disturbed by having this terrible grievance added to her other troubles. According to a petition presented to the Municipal Council of Paris (and acted on by it), "the unwholesomeness of water which has remained for any length of time without circulating, in tubes of lead, is a fact recognized by the chemists and physicians of all ages and of all countries. The water so situated dissolves the lead, and when thus contaminated, its employment for culinary use will give rise to veritable poisoning—slow, chronic, without producing sudden fatalities, and for that reason all the more dangerous, for the lead accumulates in the organisms, and only reveals itself when the mischief is consummated."

The consternation was extreme, though no one could be found who was suffering the dire effects of lead poisoning; however, Professor Dumas, Dr. Belgrand, and Dr. Felic Le Blanc, came to the rescue, and as their experiments, though not all novel, are, being recent, nevertheless very comforting to sanitary engineers and medical officers of health, who are at all times liable to have to answer for the water under their charge upon similar grounds, they may be shortly summarized. Professor Dumas, in five flasks put samples of distilled water, rain water, Seine water, Ourcq water, and surface well water; into each flask he then put granulated lead. The first water-flask, when submitted to the action of sulphuretted hydrogen, gave indications of lead in solution when the contact had been only momentary between the water and the metal. In the case of those other waters which were more or less charged with calcareous salts, no lead was found, even after standing for a considerable time. The rapidity, Dumas says, with which pure water charges itself with lead, is very surprising, but the effect produced by the merest traces of calcareous salts present in solution in preventing this reaction, is no less so. Belgrand and Le Blanc directed their inquiries to the actual effect produced by leaden pipes at present in use. They found that the total amount of leaden tubing was not very great in comparison with the other kinds of pipes. In the city of Paris there are, for water conveyance, cast iron mains, 1,466,500 miles; iron plates asphalted, 75,709 miles; lead pipes, about 3600 miles; total, 1,545,800 miles.

The public mains are manifestly above suspicion. It is only the short private branches which are of lead. The total number of these leaden connections is 39,495. The result of most careful experiments made upon the water from different sources, after passing through the lead branch into the house was, that in inhabited houses, that is to say, where the water never remains stationary in the lead branch for more than ten to twelve hours, not a trace of lead could be discovered.

With regard to water which is allowed to remain for a considerable period in contact with lead, the amount of the action depends entirely on the purity of the water. In distilled water the pretty tiny white scales of crystalline hydrated plumbic oxide form with very great rapidity, if there is free access of air, and the bottom of the vessel containing the lead and water will speedily become covered with a white deposit. Freshly fallen rain water acts nearly as well. Hence rain water for alimentary purposes should never be collected through leaden gutters. On the other hand, however, infinitesimal the amount of lime salts in solution may be, if they can be detected at all, the water in which they are found is positively free from all action as regards lead. Soft water dissolves lead, hard water preserves it untarnished. No other salts appear to preserve the lead so entirely from oxidation as do the salts of lime. Inasmuch, however, as it is impossible for water to percolate or pass over any considerable amount of soil without taking lime into solution, and this lime it is impossible wholly to remove by any means short of complete distillation; it follows that all river water may be conveyed with the most perfect security through lead pipes without in any way interfering with its wholesomeness as apotable water.

In Paris the matter is still being inquired into, and reports on the subject are expected from MM. Bouilland, Fordos, and Boudet; so that, perhaps, after the ghost of lead solution in drinking-water has been duly laid by so many priests of science, it will not reappear for some few years to come, at least not in such a bold way as to affect the repose of the scientific world.—*Iron.*

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Yager's Soldering Salts.
Ells, Curry and Horse Cards.
Disston's Saws.
Cast Hollow Ware.
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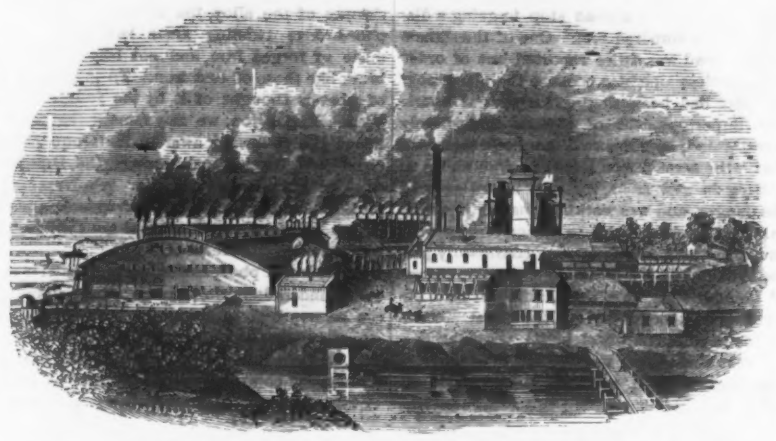

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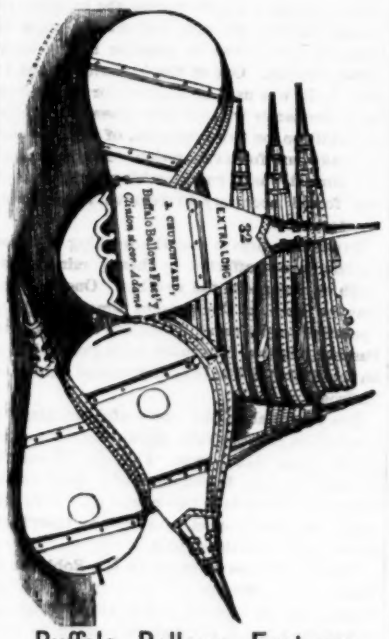

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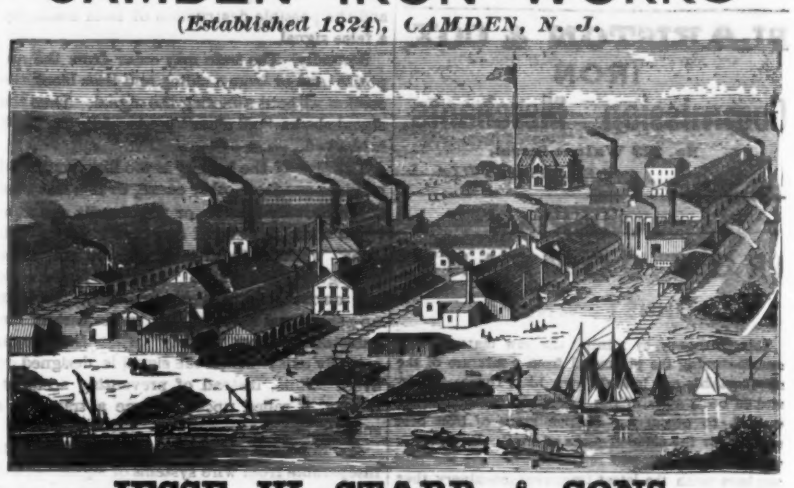

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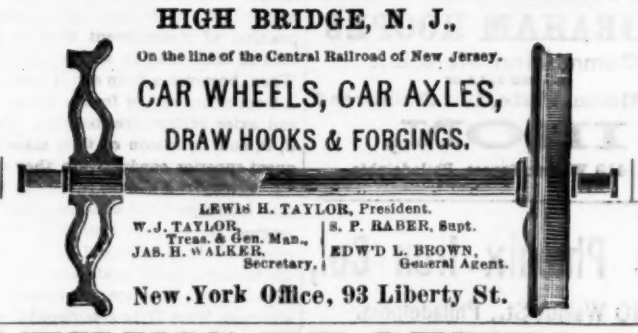

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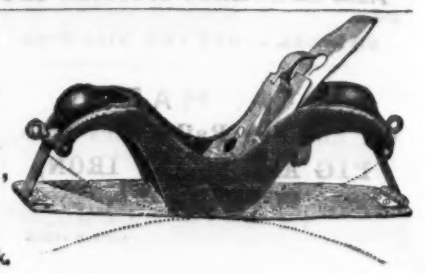

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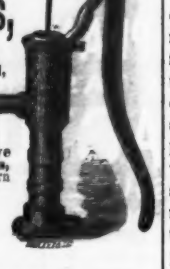

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CORRESPONDENCE.

The Kanawha Coal and Iron Fields of Putnam County, West Virginia.

PUTNAM COUNTY, WEST VIRGINIA, December 23, 1873.

To the Editor of The Iron Age: Having lately visited this section, and examined its coal and iron fields, I send you some facts respecting them which may be of interest to your readers.

The Great Kanawha River, running off at right angles from the Ohio, traverses the richest portion of the great Allegheny coal fields, cutting the coal measures of the region, 2000 feet thick, to their base, and developing their exhaustless mineral treasures in the most available manner for practical production. Although the coal beds are too far below the surface for immediate working, the iron deposits more than doubly make this section of the great coal field valuable. The exact depth of the coal in this county I am not prepared to state, but should judge it to be, from the general dip of the Allegheny coal fields, some 60 feet below low water mark of the Kanawha River.

There crop out in several parts of this county, about 250 feet above low water of the Kanawha, several veins of coal, which are commonly known as the "Raymond seam." The thickness of the several openings which I have seen do not exceed 24 to 30 inches, rendering it not a profitable business to work it. The quality is of a very superior *splint* nature, and I understand it to be the intention of parties located here, who contemplate a stone coal blast furnace, to entirely use the coal of their property, they having several outcrops of the seam above mentioned, lying immediately under a large bed of iron ore. In this case I should judge it would pay to mine, but otherwise coal mining in this county would not allow of large outlays in developing. It is too near the great coal deposits in Kanawha county, only some fifty miles up the river from this point. There exists in the highest hills of Putnam county four prominent seams of iron ore, consisting of brown and red hematite, yielding by analysis 50 to 58 per cent. of metallic iron. The seams vary in thickness from 2½ to 4 feet, and are easily mined, as they command such a position in the hills as to render stripping possible at a trifling expense. And when drifting is necessary there is no rocks to contend with. These heavy deposits are 3 to 4 miles from the Kanawha River, at an elevation of 350 feet for the highest vein.

Charles Whittlesey, an eminent geologist from Ohio, has examined the ores as they lie in this county, and concludes his report with the following remarks: "The ores already known in Putnam county are abundant in quantity, and more beds will, on examination, be brought to light. As to quality, the analyses show they are equal to the Ohio furnace district, in Lawrence, Jackson and Vinton counties, known as the 'Hanging Rock Region,' and that the percentage of iron is greater." By permission I am allowed to copy the following analysis, made by Mr. Whittlesey, of the ores of this region known as the brown hematites of Putnam county, West Virginia:

INSOLUBLE MATTER.

	Bed No. 1.	Bed No. 2.	Bed No. 3.
Silex and alumina	16·35	8·84	7·42
Lime	none.	6·08	0·20
Sulphuric acid	none.	none.	none
Phosphoric acid	not given.	0·90	0·17
Oxide of manganese	0·25	2·50	0·42
Loss by heating	not given.	9·71	10·56
Metallic iron	58·10	50·15	56·80

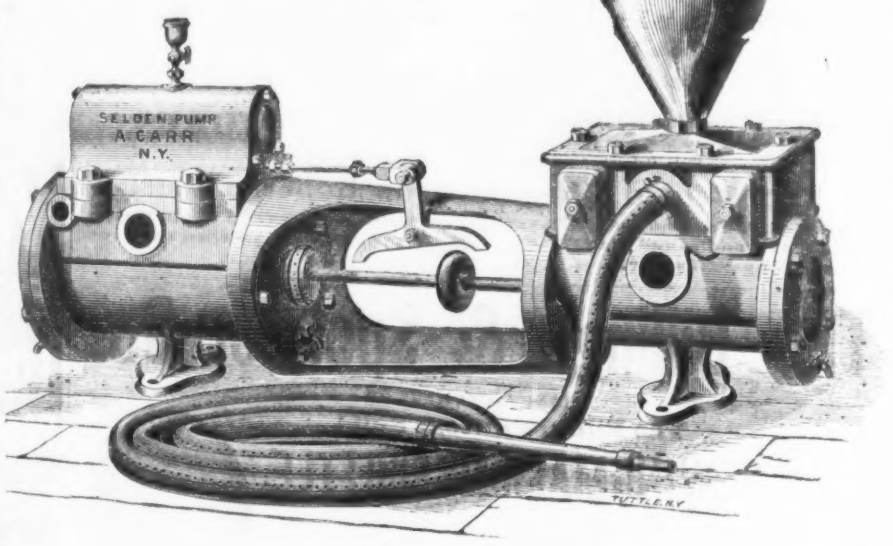
The number one ore has been used by Cyrus Mendelhal, of Cincinnati, and in reporting upon it he states:

"The ore you refer to, brown hematite, we used with Iron Mountain, Missouri, one-third West Virginia, without any marked effect on the working of the furnace, or in quality of iron produced. It was evidently very easily smelted, and the most desirable native ore we tried. We used it without calcining, having too limited furnace area to do it. The amount of phosphoric acid is certainly too small to be any injury to foundry metal, and for bars can, by Henderson's new process, long being successfully practiced near Glasgow, Scotland, be entirely removed."

The parties who are now in possession of the best portion of these deposits are pushing the railroad connecting the mines with the Kanawha River with all possible speed; and I look for grand results when these ores shall be generally worked by the furnaces of Ohio and Pennsylvania. There also exists throughout Putnam county large quantities of what is commonly known as kidney ore, yielding by analysis 85 to 90 per cent. metallic iron. So far no discovery of a regular deposit of this ore has been brought to light, it being found in large quantities on creek bottoms, and imbedded in the clays throughout the hills. No doubt there exists somewhere a deposit of this extraordinarily rich ore, but it remains to be discovered whether this is a fact. It is the present intention of the parties who own these valuable tracts to erect a charcoal cold blast furnace on the banks of the Kanawha. There is timber enough in the immediate neighborhood to run a 20 ton furnace thirty years. It has been carefully estimated that car wheel and foundry iron can be manufactured here at a figure not exceeding $20 per ton. The same metal is worth to day in Cincinnati $60 to $65 per ton. This seems almost incredible, but it is undoubtedly a fact, as it has been estimated by numbers of experienced iron men, that pig iron, without doubt, can be made at such a low figure, when such special advantages are offered in quality and quantity of ore, cheapness of mining, and almost the entire original growth, yet standing, of timber. I should be pleased to devote yet more space and time to this subject, and will state in conclusion that Putnam county presents finer openings for enterprise and capital than the best of the Kanawha Valley, or, in fact, than any of the other undeveloped mineral regions of our whole country. I omitted to mention the great advantages it posseses over many other localities for shipment in all directions. It is distant from Cincinnati by river 226 miles, and from Pittsburgh 219 miles. The cost of transportation should also be taken into consideration, as it is so far below that of other iron manufacturing centers. Pig metal or ore can be shipped to Cincinnati for from 50 to 75 cents per ton, and to Pittsburgh for $1·00 per ton.

The Selden Pump.

The accompanying sketch shows a Selden Steam Pump, of which much has lately been written, and, in general, very highly spoken of. The simplicity of its valve movements, accessibility of its parts, and its general adaptability for work of any kind, seem to be its chief recommendation, added to which the prices charged are much less than those charged for pumps of nearly every other manufacturer. These pumps have been in the market for four years, and increasing in favor every year. Three of them were exhibited at Vienna, and a medal was awarded Mr. Carr, being the only steam pump manufacturer so rewarded.



THE SELDEN PUMP.

The plunger pump made under this patent, it is claimed, combines, more than any other pump of this class, all the necessary strength and compactness required for such heavy work as they are generally used for. The attention of several German and English mining engineers have been attracted to the merits of this pump. One of them is now working in Bernsdorf, Saxony, in a coal mine, and is giving such entire satisfaction that the parties using it are already negotiating for four others. Preparations are also being made for its introduction in England, a leading Liverpool firm having taken hold of it.

A full and accurate description of the various points of this machine would require more space than we can devote to that purpose, and we would refer our readers to the printed catalogue and price list of the manufacturer, A. Carr, 43 Cortlandt street, New York, for any such information.

Copper Smelting in Chili.

It is stated that Guayacan, in Chili (described as the "model republic" of South America), is the largest copper smelting establishment in the world, and therefore some information upon the subject will be interesting in England. The trade of Guayacan is confined exclusively to the operations of the firm of Urmeneta and Errazuriz, Chilian copper smelters. At these works about thirty to thirty-five furnaces of all kinds are kept running, employing about 300 hands, of whom from forty to fifty are Englishmen, and producing annually from 8000 to 10,000 tons of copper, destined almost exclusively for the English market. The ores smelted are received both by sea and land from various mining districts in Chili, and the fuel consumed in the process of smelting is principally Chilian coal, from the mines of Labu and the coast of Araucania, a small amount of British coal being also used. During the year 1872 about 4000 tons of English coal were imported, while about 40,000 tons of Chilian coal were received. During the same period about 8500 tons of copper were shipped to England by the steamers of the Pacific Steam Navigation Company. During the year 1872 about 14,000 tons of copper ores and regulas entered the port of Guayacan, carried almost exclusively by sailing vessels belonging to the Chilian copper smelters, none of which vessels carry the English flag. The little British colony of workmen established in this part enjoy, on the whole, exceptional advantages. They are lodged in excellent houses, and receive from £12 to £30 per month, according to their skill, with coal and medical attendance, &c., gratis. There is a great dearth of hands in the province. The Panulsillo, an English limited liability company, have works in the interior of this province (Coquimbo), and employ about 900 hands. Their annual production of copper ores is stated to be 40,000 tons of 5 per cent., while the coal consumed is over 10,000 tons. The La Compana is another establishment in this province, where the quantity of copper in bars produced annually is about 1000 tons, and the quantity of coal consumed over 2000 tons. According to the official statistics, we learn further that the total exports of copper from Chili during the year 1872 were 45,500 tons, and from Bolivia 100 tons. The amount of coal exported from England to Chili from 1st January to 31st October, 1872, was no less than 178,893 tons, thus showing how large are the coal exports from that country to the Republic of Chili.

Machinists in the Navy.—The Navy Department, to secure a better class of men as machinists in the navy, has decided upon alterations in their status that will make the position one of honor to the incumbent. The machinist is an appointed petty officer of superior grade, and on board ship has, with other appointed officers, a separate mess, which is supplied by its members as they may see fit. The pay has been increased from $61·50 to $76·50 per month, which latter amount is still further increased, if the ration be commuted, to $84, or $1008 per annum. The machinist may either be enlisted as such, or may be appointed by the chief engineer of a vessel going into commission. In either case his position and duties are the same. He is required to take charge of the engine and fire room watches, under direction of the engineer officers, and must have had before his appointment some experience in running engines of ocean, lake or river steamers.

Enameled Iron.—M. Peligot has made a report to the Society for the Encouragement of Industry, on the enameled wrought and cast iron work introduced by M. Paris about twenty-five years ago, and for which the Society have awarded him two medals. According to the report in question, the enamel used is a true transparent glass which allows the color of the iron to show through, very tenacious, having the same power of dilatation as iron, and capable of resisting powerful acids. The ordinary white enameled ware of Paris generally contains lead, and often in large proportions, and is liable to be attacked by even very weak acids. M. Paris' ware has been employed for many purposes, cast iron vases for gardens, decorated in imitation of old Rouen ware, have been exposed to all weathers without suffering any injury; a chimney in enameled plate iron was set up at the Maxas prison in 1849; the doors of the gold assay furnace of the laboratory of the Paris mint are of the same, and have borne the effect of nitrous vapours since 1850; in 1866 this enameled iron was selected for street names and house number plates, in several districts of Paris, and the report states that while other manufacturers make enameled ware of the same appearance as that of M. Paris, the latter has shown its superiority in resisting the effects of time. Specimens of new applications lately introduced by M. Paris were presented to the Society, and included chairs, tables, and stools for gardens, enameled on sheet iron and mounted on castings; and stands for dishes, decanters &c., made in imitation of ancient earthenware, but presenting the superior advantage of bearing heat well.

The Foundries and Forges Co., of Besseges and Terre Noire La Voulte, France, have introduced a new and improved furnace and process for the manufacture of metallic alloys. Ores containing tungsten, titanium, or manganese, separately or in any required combination or quartz, all finely pulverized and commingled in suitable proportions, are to be mixed with scraps of cast iron or steel, in a nearly uniform state of division, such as iron filings, iron turnings, or wrought iron, cast iron or steel, granulated or pulverized, or spongy iron, and the whole to be reduced in a special furnace. For the construction of the cupola, very hard firebrick, containing a large quantity of alumina in their composition, are employed; the boshes being constructed of pure alumina, of magnesia, or of lime; and the crucible or hearth of carbon, lime, or magnesia. When made of carbon, the crucible is constructed in one piece by molding a mixture of tar with pure graphite, gas-coal, or pure coke, in a strong sheet iron box, the whole being well closed up, and heated for a few hours to a dark red heat, whereby a very hard and compact mass is obtained. This looks sufficiently promising, although the merit of originality can scarcely be claimed either for the comminution and commingling of the materials, or for the introduction of tungsten, titanium, or manganese in iron alloys.

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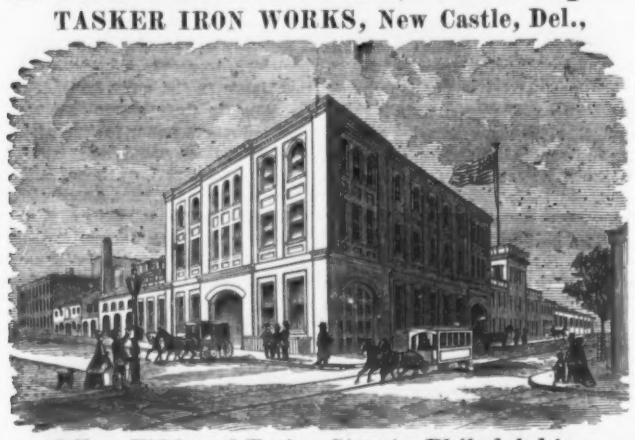

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Best Quality Lap Welded Iron Boiler Tubes,

STEAM AND GAS PIPE,

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With Patent Protecting Coupling;

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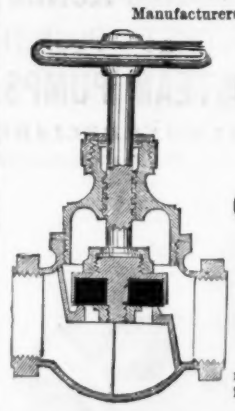

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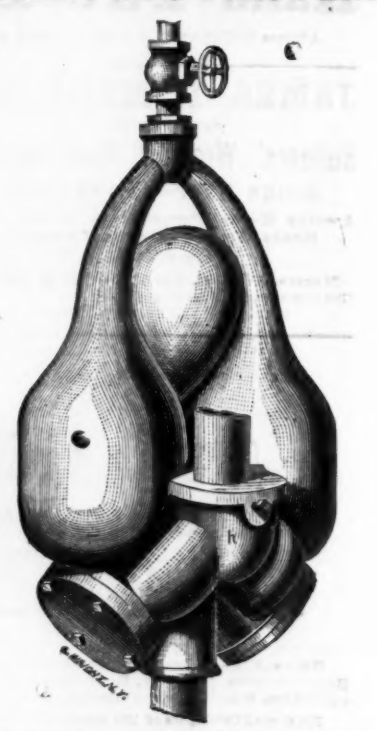

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One-sixteenth to five-eighths diameter.
Heads and points to sample.
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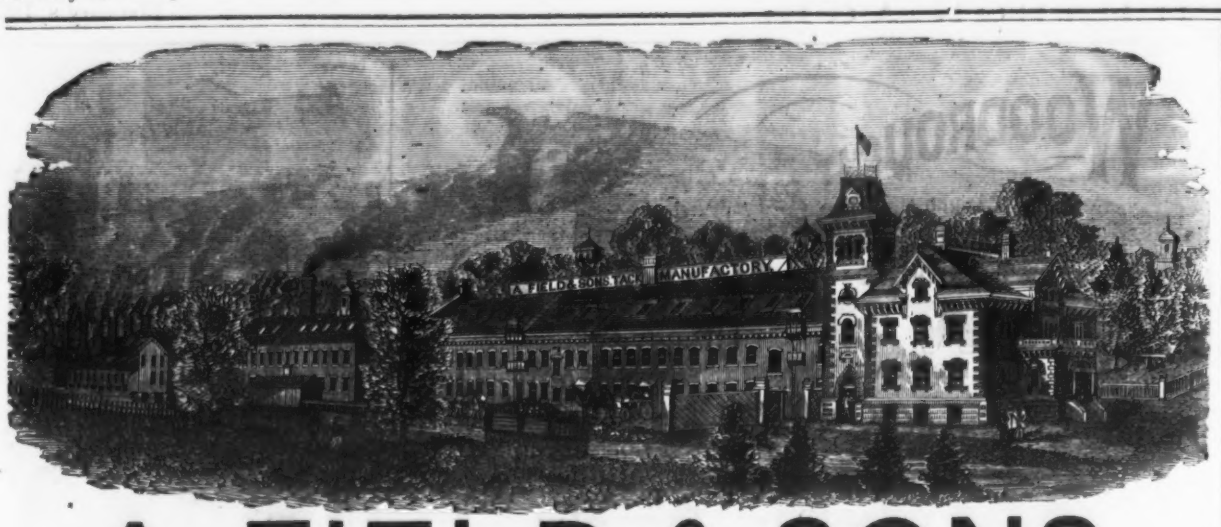

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SUPERIOR SWEDES IRON TACKS. for Upholsterers' Use, Saddlers' Supply, Card Clothing, etc., etc.

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Manufacturers of the

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MATTOCKS, HATCHETS AND OTHER ADZE EYE TOOLS.

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Having doubled their Manufacturing facilities, they can now fill orders promptly.

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Where Catalogues and Discounts can be had on application.

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Something New for

OTIS FURNACES & MINES.

New Union Steam Safety Elevator,

How One Works.

RIVERSIDE IRON WORKS, DEWEY, VANCE & CO., Wheeling, W. Va., January 14th, 1873.

Messrs. OTIS BROTHERS & Co., New York.

Dear Sirs: The experience of a year proves that ***your Furnace Elevator is superior to all others in use.*** We have in the six weeks from December 1st to Sunday last, 12th inst., made ***2724 tons, 1401 lbs. Pig Metal,*** or an average of near ***65 tons per day,*** which required the elevator to ***lift 72 feet high*** 4¼ tons Ore, Coke and Limestone for each ton of metal produced, or ***more than 11,500 tons material in the 6 weeks.*** The largest yield in ***one*** day was ***81 1-4 tons*** Iron, involving the lifting of ***345 tons*** material ***in 24 hours.*** This has all been done to ***our satisfaction,*** and that, too, in the ***coldest weather we have had.*** Other furnaces with ***water*** and ***pneumatic hoists*** have experienced ***great difficulty,*** on account of the ***water freezing*** in the ***tanks;*** and in the case of the ***air*** hoists, we understand that two furnaces, not far from us, ***had*** to ***"blow out,"*** from being ***unable to hoist stock*** during the ***"cold snap."*** The difficulty, we are told, was caused by the ***condensed moisture*** in the ***blast freezing to the sides of the cylinders,*** so that the ***piston could not move*** up or down.

Very truly, yours, DEWEY, VANCE & Co.

for Circular to

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NEW YORK SCREW BOLT WORKS.

(Estate of R. J. DEWHURST, deceased.)

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Bolts, Nuts, Turnbuckles, Washers, Forgings, &c

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DEMAREST, JOYCE & CO.,
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Plain and Ornamental Japanning.
20 to 30 Morton, and 57 to 65 Clymer Streets,
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Prices Reduced!!!
OHIO TOOL CO.,
Planes and Plane Irons.
J. CLARK WILSON & CO., Agents.
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BUSINESS ITEMS.

NEW YORK.

Alpina Furnace, Lewis County Iron and Mining Company proprietors, Lott Frost, manager, is 32 feet high and 9 feet at boshes; fuel, charcoal; ore, red hematite; capacity, 63 tons per week. The furnace is making a ton of iron with 85 bushels of charcoal, carrying 500 lbs. ore on 12 bushels charcoal.

PENNSYLVANIA.

The Jackson & Woodin Mfg. Co. resumed operations on the 29th ult., and have a contract for 400 box cars for the N. Y. Central Railroad. The capacity of the works are 6 cars and 200 wheels per day.

The Keystone Forge, at Bristol, Bucks county, which has been idle so long, is about to be turned into a mill for the manufacture of sheet zinc.

Messrs. Clarke, Reeves & Co., proprietors of the Phœnixville Bridge Works, Philadelphia, propose to construct a wrought iron tower, 1000 feet in hight, to be completed for the American Centennial Exhibition in 1876. The tower is to be circular in section, 150 feet in diameter at the base, dimmishing to 30 feet at the top. It is proposed to have spiral staircases winding around the center tube for those preferring to walk up; but elevators will be provided, which are calculated to ascend to the top in three minutes.

At present, there are orders being filled in Pittsburgh iron works for Belgium, Mexico, New Brunswick and France. The first three are for rolling mill machinery, while the fourth is for steel.

The Lehigh Valley Spike Works, at Allentown, are now running on full time, with a large force of hands.

The new furnace of Knox, Kim & Co., Pittsburgh, which is about to begin operations, is in part an experiment. The chimney is built higher than usual, to get a stronger draft.

According to the Bristol, Bucks county, *Observer*, the arrangements for the establishment of a great iron manufactory in that place are nearly perfected. The company, chartered in New York, is to have a capital of $1,000,000, with the president's brother, Orville L. Grant, at its head.

The rolling and nail mills of E. & G. Brooke, Birdsboro, Berks county, are in full operation again, after a brief stoppage to put in a new cylinder head.

Roach's shipyard, at Chester, is crowded with work, giving employment to 1600 hands.

The rail and puddle mills of the Pennsylvania Iron Works, Danville, started in full operation on the 15th ult.

CONNECTICUT.

At Norwich, the Richmond Stove Company's employees have entered upon a reduction of 15 per cent. in their wages.

OHIO.

The Niles Tool Works, of Hamilton, Butler county, with a capital stock of $200,000, in shares of $100, have filed a certificate of incorporation.

Gillis' car shops and rolling mill, at Columbus, have suspended operations.

The Girard Furnace, Youngstown, which has been undergoing repairs during the past two months, went into blast a few days since, and is producing about 35 tons per day.

In 1854, Messrs. Long & Allstatter, of Hamilton, began to build reapers, mowers and machine sickles, and at sundry subsequent periods added to their list of manufactures, steel sulky hay rakes, straw cutters, and other agricultural implements, beside a variety of machinists' and manufacturers' tools. As their business increased they added to their original premises a room or a shed, as the exigencies demanded, until they entirely outgrew the facilities afforded by the old site. They were, therefore, compelled to seek out a new location, and purchased, some time ago, ground at the corner of High street and C. H. & D. R. R., on which last summer they erected and now occupy the Hydraulic Iron and Agricultural Works. The premises cover, in the aggregate, a space of 230 by 400 feet, and the buildings comprise a foundry 123 by 50 feet; a smith shop, 48 by 75 feet; stock room, 48 by 80 feet; carpenter shop, 48 by 75 feet; machine shop, of one story and basement, 98 by 156 feet; engine room, 24 by 48 feet; pattern house, two stories, 40 by 60 feet; and a two story and basement wareroom, 144 by 48 feet. They have thus put themselves in a position to very greatly increase their business. They employ at present 150 hands, and throughout the panic they neither turned off nor reduced the wages of any of their employees, but have had to work extra time to keep up with their orders, facts which abundantly testify to the energy and enterprise of the firm, and to the esteem in which their manufactures are held.

The Akron Sewer Pipe Company claims to have the oldest factory of the kind in the country. The works have been added to greatly within the year, and new engines and machinery have been introduced. There are two buildings; one of frame, three stories, 40 by 140 feet; the other of brick, two stories, 50 by 240 feet; beside kilns, store houses, etc. The works have been manufacturing vitrified clay pipe since 1848, and now do an annual business of $300,000, employing $200,000 capital, and using 15,000 tons of raw clay yearly. The monthly pay roll is $3000 to $5000 to 75 hands.

The Cuyahoga Falls Wire Works will soon be ready to begin manufacturing.

Messrs. Stoney, Chambers & Macbeth, proprietors of the Eclipse Iron Works, at Cleveland, are manufacturing rolling mill, car, bridge and builders' castings. They also make patterns of all kinds to order. Their works are in successful operation, and the concern has large orders ahead.

The Jefferson Iron Works, at Steubenville, are running double turn, producing a good quality of nails. This establishment consists of 23 boiling and 3 heating furnaces, a squeezer, one train 22 inch muck rolls, and a nail mill, in which are 90 machines, that turn out 3500 kegs per week of nails, ¾ to 7 inches in length.

ILLINOIS.

The Excelsior Iron Works, Chicago, owned by Carlisle, Mason & Co., turns out annually $400,000 worth of marine and stationary engines, grain elevators, pumps, oil purses, quartz crushers, boilers, tanks, smoke pipes, blast furnaces, gas and water valves, etc. The average number of hands employed is 160.

The Chicago *Times* boasts of the growth of that city in manufacturing industry, the capital in which increased, according to its statement, 707 per cent. from 1860 to 1870, against 212 per cent. in New York, and 238 per cent. in Philadelphia.

The U. S. Brick Machine Works, at Chicago, employ 150 men, on an average. Annual product about $1,500,000.

The Steam Motor Works, at Farrington, are to increase the number of its employees to fifty.

The Union Foundry, Chicago, when running full, employs 430 hands, and produces $1,500,000 worth of work annually. All the iron work for the new Chicago custom house and post office will come from this establishment. The basement iron work is already in place, and the iron columns for the first story are now being completed. There will be ninety of these columns, 22 inches in diameter, 30 feet in length, and 15,000 to 16,000 pounds in weight each.

KENTUCKY.

E. M. Norton, President of the great Norton Iron Works, at Ashland, estimates that the mill will turn out about 500 kegs of nails a day, beside making pig iron from the rich ore near by. Over 400 operatives will be employed.

TENNESSEE.

The Nashville *Journal of Commerce* says: The Roane Iron Company, of Chattanooga, have resumed operations, and have just ordered from the Tennessee Coal Company ten cars of coal per day. The Tennessee Coal Company is also supplying, as usual, the Scofield Iron Mill, at Atlanta, Ga.

WISCONSIN.

The Green Bay Iron Furnace did an excellent month's work in November, turning out 546 tons of pig iron, which makes an average of about eighteen and a half tons per day.

VIRGINIA.

At Clifton Forge, on the Chesapeake & Ohio Railroad, a Mr. Fisher is erecting a blast furnace of medium capacity. It will use hematite ore and splint coal from West Virginia for fuel. A Mr. Cook is erecting a similar furnace about five miles below.

WEST VIRGINIA.

Lancaster Furnace, situated seven miles east of Grafton, on the Baltimore & Ohio Railroad, will go into blast in the spring. The hight of the stack is 60 feet, the outside diameter at the boshes is 15½ feet, and it has a closed top.

The Belmont Iron Works, Wheeling, are running double turn, turning out 5000 kegs nails per week. The buildings cover about 4½ acres. The mill contains 22 boiling and 3 heating furnaces, a train of 22 inch muck rolls, a nail plate mill and 110 nail machines, the entire works giving employment to 500 hands, who are paid in full in cash every two weeks. The works are owned by a stock company, of which Messrs. H. Wood is president, J. D. Dubois, vice president, and Messrs. Reisher & Burke, managers. Their blast furnace will soon be completed.

The new Ætna Mill, opposite Wheeling, was in operation on the 15th ult., to test the engine, forge and muck train. Everything worked satisfactorily. The works contain three trains of rolls, muck train, sheet and bar mill, and will manufacture merchant iron, and rails from 8 to 40 lbs. to the yard. The Ætna Works are owned by a stock company, and from the character of the gentlemen composing the executive board, will prove a good investment for the stockholders. Mr. W. W. Halloway is president, Mr. W. H. Tallman, secretary, and Mr. Lewis Jones, a gentleman of large experience in the iron business, manager.

ALABAMA.

The Tecumseh Iron Co. is located at Tecumseh, Ala., instead of in Georgia, as stated in our items a few weeks since. The furnace is a hot blast charcoal furnace, 60x12 feet, with iron stack, and lining of 16-inch Sciotoville, O., fire tile, and hearth of Mt. Savage 18-inch fire tile. Fire brick in bottom 3 feet deep and 3 feet thick on sides, with water jacket all round. The steam cylinder is 36x48, with blowing cylinder 48x84. They have four boilers, 50 ft. by 40 in., and hot blast of 48 pipes, both boilers and hot blast being constructed in two batteries, so that in case of accident they can run with either battery, while repairing the other. They use a steam hoist. Their ore is brown hematite, analyzing 60 per cent., by Britton, of Philadelphia, and limestone, by same analysis, 95 per cent. carbonate of lime. The ore and limestone are within 400 yards of the furnace in unlimited quantities, and contracts have been made for a year, for mining the same for $2·25 per ton of pig iron made, the contractor to roast and screen. A branch road, 1¼ miles long, built and owned by the company, and connecting with the Selma, Rome and Dalton Railroad, runs in front of casting house, 75 feet distant, with bank or surface of the ground on a level with the floor of the car.

MAINE.

Yankee sharpness is proverbial, and not a little of it goes into the axes manufactured by Steward, Williams & Co., of Skowhegan. Of these useful tools this firm produce a great variety, but give special attention to the axes known as the "Forest" and the "Wood-chopper's Pride." Of these they have turned out, during the past year, over 7000 dozen, which have been wielded in the lumber regions of the North and East, giving unqualified satisfaction for temper and durability. Messrs. Steward, Williams & Co. give employment in their works to 40 hands, and run 9 hammers. Their machinery is driven by a never-failing water-power, one of the finest in the State. They began operations in 1865, and have rapidly extended their business, which is now one of the most extensive of its kind in the United States. Their axes are used in all parts of the country, and rank with the best manufactured. The members of the firm personally superintend all the processes of manufacture, and thus secure the highest faithfulness in workmanship, as well as excellence of material.

HENRY DISSTON & SONS'

SAW, TOOL,

STEEL AND FILE WORKS,

Front and Laurel Streets,

PHILADELPHIA, PA.

H. W. PEACE,

MANUFACTURER OF

SAWS OF ALL KINDS.

FACTORY, WILLIAMSBURGH, N. Y.

AMERICAN SAW CO.,

No. 1 FERRY STREET, NEW YORK.

Solid saws require frequent gumming, thereby subjecting them to risk of springing or breaking. This is especially the case with cross cuts having *Patent Teeth*. In the perforated saws **all gumming is avo** and the teeth are easily kept long and in *proper shape*, saving *files, labor, expense* and *vexation* As is ell known, our saws cut faster, smoother and easier than any other.

MOVABLE-TOOTHED CIRCULAR SAWS AND SOLID SAWS OF ALL KINDS.

GEORGE GUEUTAL,

39 West 4th St., New York.

IMPORTER OF

Wood Screws, Steel in Sheets,

BAND SAWS, TOOLS FOR BRAZING, &c.

Bed Screws, Pin Hinges, and Wire Nails a Specialty.

Putnam's Government Standard

FORGED

HORSE SHOE NAILS.

Manufactured from the best of **NORWAY** Iron, and warranted to give entire satisfaction.

S. S. PUTNAM & CO.,

NEPONSET, MASS.

Alexander Brothers,

Manufacturers of OAK TANNED

LeatherBelting

412 North 3d, Philadelphia, Pa.

BRADFORD & SHARP,

Manufacturers of

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OAK TANNED,

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We furnish many of the largest Iron Mills in the West and guarantee quality of all goods sold.

Send for prices.

Schweitzer Mfg. Co.,

57 Reade Street, New York.

CONTINENTAL LOCKS,

Made of Wrought Iron or Brass, very superior in quality, and only an auger used in mortising.

SCHWEITZER PAD LOCKS,
EXCELSIOR COMPASSES.
EXCELSIOR DIVIDERS,

WITH

STUBS' STEEL POINTS,

Best and Cheapest Goods in the market. Sole Agents for the United States for

NEWBOULD'S FILES AND TOOLS

French Coffee Mills.

NOBLE MFG. CO., Tools, Ship Augers, &c.

Emery, Waterhouse & Co., Shovels & Spades

We also make a superior

AXE. { *"Queen of the Forest,"* / *"Wood Chopper's Pride," &c.*

Disston's Saws. (Largest Stock in the City).

General dealers in

FOREIGN & DOMESTIC HARDWARE.

WM. H. STOYLE.

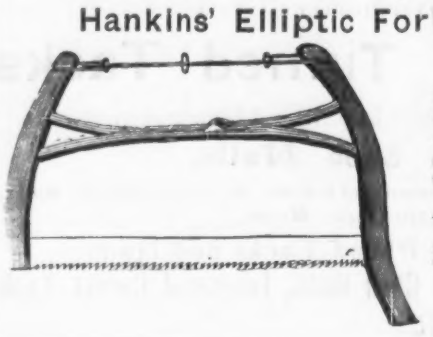
MANUFACTURER OF

Machine Cut Belt Lacing,

No. 403 Library Street,

Hankins' Elliptic Forked Saw Frame.

Patented June 28th, 1870.



The annexed engraving represents HANKINS' ELLIPTIC FORKED SAW FRAME, which commends itself to the trade for its simplicity of construction. The Forked Brace being all in one piece, without any centre bolt, secures for the Frame great strength and durability.

These Frames are put up with my best Webs, marked "No. 40, Harvey W. Peace."

HARVEY W. PEACE

VULCAN SAW WORKS,

WILLIAMSBURGH, N. Y.

W. ROSE & BROTHERS

WEST PHILADELPHIA,

Manufacturers of

Plasterers' and Brick Trowels

Hammers and Chisels.

ALSO,

Saddlers' Round Knives etc.,

N. E. cor. 36th & Filbert Sts.

☞ Please send for Price List.

E. C. ATKINS & CO.,

Indianapolis, Indiana,

Saw Manufacturers.

Best Cast Steel Patent Ground Saws,

Also, sole Manufacturers of Atkins' Patent

CROSS-CUT SAW HANDLE.

Best Patent Handle in use.

Manufactory and Office—Nos. 210, 212, 214 and 216 South Illinois Street.

I make a specialty of the LARGEST SIZES of **Circular Saws**, and call particular attention of lumber manufacturers to the following points of excellence:

Evenness of Temper.—The peculiar structure of my furnace subjects all parts of the saw to a DEAD heat, and when dipped in the oil bath secures perfect uniformity.

Perfect Accuracy in Thickness.—My saws are ground on a patent machine, automatic in its operation, grinding off the thick places upon the plate before the thinner parts are reached, and when the saw is removed BALANCES PERFECTLY, which is proof positive of the right accomplishment of the work.

Properly Hammered.—Great care is taken that no saw shall leave my works without due attention in this important particular. A saw too tightly strained upon the rim, or too loose in the center, cannot be successfully run—hence the importance of so hammering the saw as to effect equal strain in all its parts, and at the same time RUN TRUE. This department is under the personal supervision of myself, who has devoted over *twenty years* to the art of saw making.

I am sole proprietor and manufacturer of the celebrated "Challenge" **Cross-Cut Saw.** Price Lists of all kinds of saws sent on application.

JAMES OHLEN.

J. FLINT & CO.

Manufacturers of all kinds of **SAWS** and **PLASTERING TROWELS.**

ROCHESTER, N. Y.

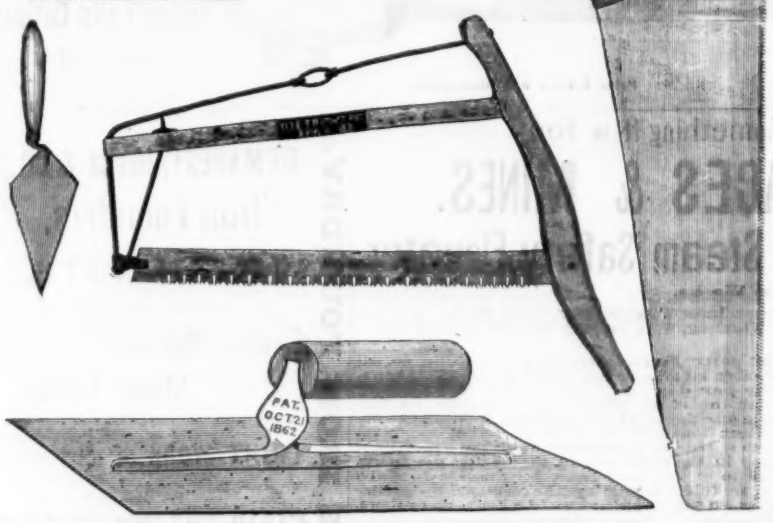
Dietrich's Patent Wood Saw. Guaranteed the strongest, lightest, easiest to strain or tighten and best braced wood saw made; also to give perfect satisfaction.

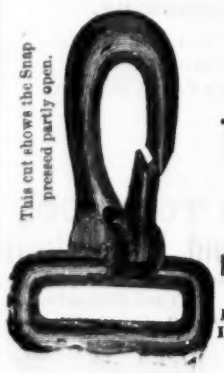
Dietrich's Patent Double Handle Rip Saw. All will readily see the benefit of this useful invention.

J. Flint's Patent Plastering Trowels. The best made and finished Trowels in the world. We make four grades of Plastering Trowels, from the best to the cheapest.

Our patent method of grinding hand saws makes them superior to any in the market.

Send for Illustrated Price List.





This cut shows the Snap pressed partly open.

MIDDLETOWN TOOL CO.,

MIDDLETOWN, CONN.,

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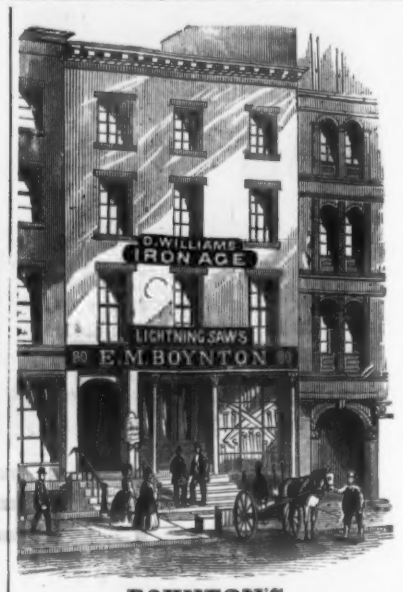

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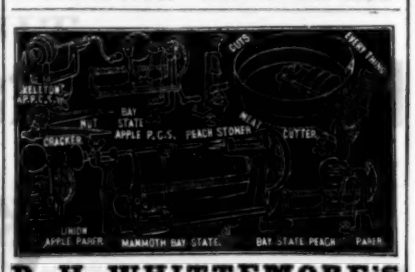

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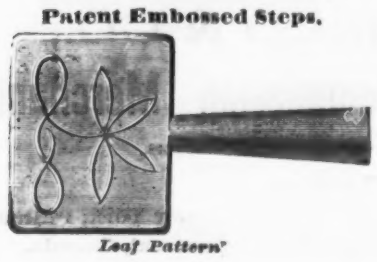
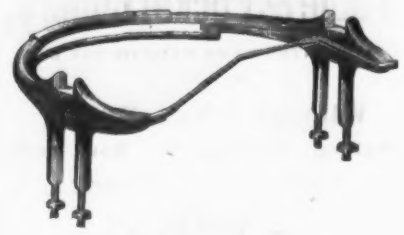


Leaf Pattern.

King Bolt Yokes.

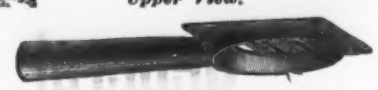
No. 6 Fifth Wheels.



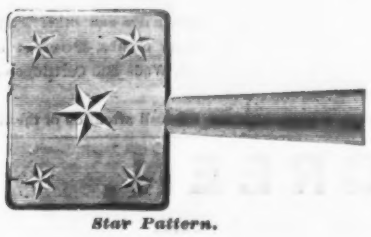
1871 Pattern Shaft Couplings.

Patent Cross Bar Steps.

Upper View.



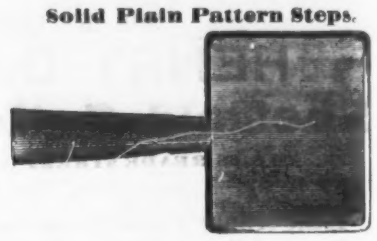
Lower View.



Star Pattern.

Smith's Improved Philadelphia Pattern Slat Irons.

Solid Plain Pattern Steps.



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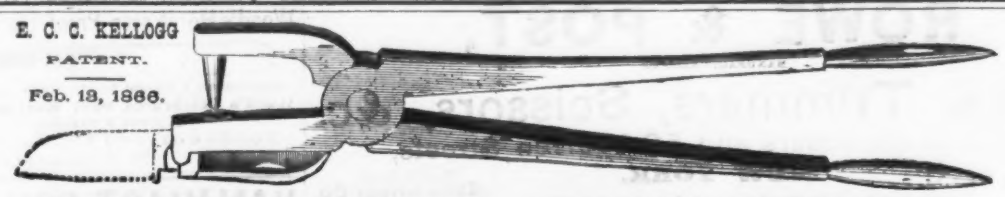

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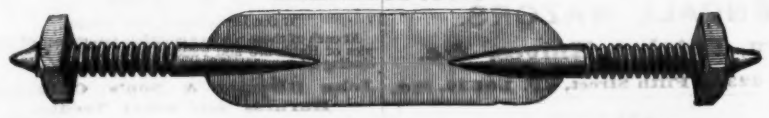

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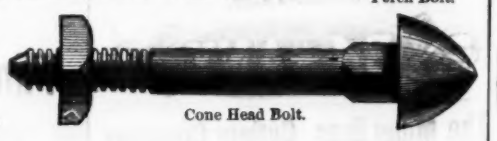

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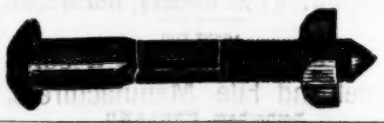

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- Wilson John, Sheffield, England 11

Butts and Hinges. *Makers of.*
- American Butt Co., Providence. R. I. 30
- American Spiral Spring Butt Co., 27 Park Row. N. Y. .32
- Ætna Nut Co., Southington, Conn. 14
- Crooke & Co., 163 Mulberry, N. Y. 3
- McKinney Mfg. Co., Hamilton, O. 15
- Roy & Co., West Troy, N. Y. 11
- Stanley Works, 58 Beekman, N. Y. 14
- Union Mfg. Co., 55 Chambers, N. Y. 7

Cabinet Hardware, *Manufacturers of.*
- Landers, Frary & Clark, 298 Broadway, N. Y. 11

Carriage Bolts, *Makers of.*
- Skelly T., 24th below Callowhill, Phila. 12
- Townsend, Wilson & Hubbard, Phila. 12

Carriage Hardware, *Makers of.*
- Smith H. D. & Co., Plantsville, Ct. 12

Car Wheels, etc., *Manufacturers of.*
- Jackson & Woodin Mfg. Co., Berwick, Pa. 4
- Taylor Iron Works, High Bridge, N. J. 6

Chains, *Makers of.*
- Cain, Gordon & Co, 1845 Richmond, Phila. 4
- Kendrick & Runkle, Trenton, N. J. 4
- Wyatt Thos., 771 Eddy, Providence. R. I. 4

Chisels, *Manufacturers of.*
- Buck Bros., Millbury, Mass. 21

Clothes Wringers. *Manufacturers of.*
- Providence Tool Co., 11 Warren, N. Y. 14

Coal, *Miners of.*
- Pardee A. & Co., 111 Broadway, N. Y. 6

Coal Hods, *Manufacturers of.*
- Easterbrook Wm., 311 Cherry. Phila. 32
- Ohio Coal Hod Co., 437 E. Front, Cincinnati, O. 19
- Smith Burns & Co., 45 Cliff, N. Y. 24

Coffee and Spice Mills.
- Lane Brothers, Millbrook, N. Y. 14
- Enterprise Mfg. Co., Philadelphia, Pa. 26

Coffin Trimmings, *Makers of.*
- Wayne Hardware Co., Cincinnati, O. 12

Commission Merchants, *English.*
- Goddard Samuel A. & Co., Birmingham, Eng. 2

Compasses and Dividers, *Manufacturers of.*
- Bemis & Call Hardw. & Tool Co., Springfield, Mass. .10

Cooper's Tools, etc., *Dealers in.*
- Little Chas. E., 59 Fulton N. Y. 4

Corrugated Stove Pipe Elbows, *Makers of.*
- Corrugated Metal Co., East Berlin, Conn. 4
- Sellew Elbow Co., N. Y. and Chicago 15

Crucibles, *Manufacturers of.*
- Newkumet Adam, 1537 N. Front, Phila. 13
- Ross, & Hoferkamp, 438 N. 6th, Phila. 25
- Strow, Wile & Co., 709 Market, Phila. 25

Curry Combs, *Manufacturers of.*
- Kellogg W. P. & Co., Troy, N. Y. 30

Cutlery, *Importers of.*
- Boker Hermann & Co., 101 Duane, N. Y. 11
- Dickinson Henry, 66 and 68 Reade, N. Y. 11
- Fisher Jos. S., 411 Commerce, Phila. 11
- Friedman & Lauterjung, 14 Warren, N. Y. 11
- King H. & J. W., 80 Chambers, N. Y. 11
- Peace Chas. Jr., 82 Chambers, N. Y. 11
- Ward Asline, 101 Duane, N. Y. 11
- Wilson Hawksworth, Ellison & Co., 80 John, N. Y. 28
- Smith & Hall, 50 and 60 Reade, N. Y. 11
- Taylor Thomas 43 Chambers N. Y. 11

Cutlery, *Manufacturers of.*
- American Knife Co., Thomaston, Conn. 11
- Burkinshaw Aaron, Pepperell, Mass. 11
- Landers, Frary & Clark, 298 Broadway, N. Y. 11
- Miller Bros. Cutlery Co., W. Meriden, Conn. 11
- New York Knife Co., Walden, N. Y. 11
- U. S. Steel Shear Co., W. Meriden, Conn. 12
- Woods Cutlery Co., Antrim, N. H. 11

Differential Pulley Blocks, *Makers of.*
- Van Wart & McCoy, 43 Chambers, N. Y. 31

Door and Gate Springs.
- The Challenge Door Spring Co., 49 Ann. N. Y. 26
- Van Wagner & Williams, 21 Park Row 32

Dredging, *and Makers of Dredging Machines.*
- Am. Dredging Co., 214 S. Delaware ave., Phila. 31

Drill Chucks, *Manufacturers of.*
- Hull F. A. & Co., Danbury, Conn. 30

Drilling Machines, *Makers of.*
- Miller Falls Co., 78 Beekman, N. Y.
- Thorne & DeHaven, Philadelphia 31

Edge Tools, *Makers of.*
- Bradley G. W., 37 Chambers, N. Y. 7

Elevators, *Makers of.*
- Otis Bros. & Co., 348 Broadway, N. Y. 9

Emery.
- The Union Stone Co., 16 Exchange, Boston 23

Emery Cloth.
- The Union Stone Co., 16 Exchange, Boston 23

Emery Wheels, *Makers of.*
- Tanite Company, Stroudsburg, Pa. 28
- The Union Stone Co., 16 Exchange, Boston 23

Engineers, Machinists, etc.
- Henshall James, 1056 Beach, Phila. 31
- James Moore, cor. 19th and Buttonwood, Phila. 31
- Taws & Hartman, 1235 N. Front, Phila. 31

Engines, Steam, *Makers of.*
- New York Steam Engine Co. 98 Chambers. N. Y. 31
- Shapley & Wells, Binghamton, N. Y. 31
- Whitehill, Smith & Hampson, Newburgh, N. Y. 25
- Woodruff Iron Works, Hartford, Conn. 30

Engravers, *Wood.*
- Patterson Jas. S., 21 Spruce, N. Y. 6
- Photo-Engraving Co., 62 Courtland, N. Y. 8
- Roberts Wm., 36 Beekman, N. Y. 28

Eyelets.
- Union Eyelet Co., Providence, R. I. 3

Faucets, *Self-Measuring, Makers of.*
- Enterprise Mfg. Co., of Pa., Phila. and N. Y. 26

Files, *Importers of.*
- Carr J. & Riley 82 John, N. Y. 28
- Dickinson Henry, 66 and 68 Reade, N. Y. 11
- Fisher Joseph S., 411 Commerce, Phila. 11
- Frasse Peter A. & Co. 95 Fulton, N. Y. 21
- Moss F. W., 80 John, N. Y. 28
- Sanderson Bros. & Co., 16 Cliff, N. Y. 28
- Spear & Jackson, 96 Chambers. N. Y. 13

Files, *Manufacturers of.*
- Barnett G. & H., 41 and 43 Richmond, Phila. 21
- McCaffrey & Bro., 1732 and 1734 N. 4th, Phila. 21
- Nicholson File Co., Providence, R. I. 21
- Wheeler, Clemson & Co., Middletown, N. Y. 10

Fire Arms, *Manufacturers of.*
- Spies, Kissam & Co., 27½ Broadway 26

Fire Brick, *Makers of.*
- Hall A. & Sons, Perth Amboy, N. J. 13
- Kreischer B. & Son, 58 Goerck, N. Y. 13
- Newkumet Philip, 23d and Vine, Phila. 13
- Palmer, Newton & Co., Albany, N. Y. 13
- Watson John R. Perth Amboy, N. J. 13

Fluting Machines.
- Meyers Mfg. Co., 200 Centre, N. Y. 14

Flint and Emery Paper and Cloth.
- Cowdin Mfg. Co. 118 Chambers, N. Y. 11

Gage Cocks and Damper Regulators.
- Murrill & Keizer, Baltimore, Md. 31

Galvanized Iron.
- Lefferts Marshall Jr., 94 Beekman, N. Y. 4

Glass. *Importers of.*
- Downing A. C. & Co., 57 Beekman, N. Y. 23

Governors.
- Shive Governor Co., Bethlehem, Pa. 27

Grindstones.
- McDermott J. & Co., Cleveland. O. 23
- Shepard Sidney & Co., Buffalo, N. Y. 6
- Wood Walter R., 283 and 285 Front, N. Y. 23

Gunpowder. *Makers of.*
- Kneeland F. L. (Dupont) 70 Wall, N. Y. 28
- Laflin & Rand Powder Co., 21 Park Row, N. Y. 28

Hammers, etc., *Manufacturers of.*
- Emmet Hammer Co., Brooklyn. E. D., N. Y. 3
- Hammond C. & Son, 13 N. 5th, Phila. 3
- Minot & Co., Oliver, Boston 9
- Nelson Tool Works, 157 E. 32d, N. Y. 3

Handles, Hoe, Rake, &c.
- Smith J. W. H. & Co., Charlotte, Mich. 26

Hardware, *Brass and Galvanized.*
- Tiebout W. & J., 290 Pearl, N. Y. 2

Hardware. Commission Merchants.
- Fernald & Sise, 100 Chambers, N. Y. 21
- Green R. M., 100 Chambers. N. Y. 11
- Graham & Haines, 88 Chambers, N. Y. 26
- Walbridge Geo. B., 50 Chambers, N. Y. 23

Hardware Dealers.
- Brower John I. & Son, 288 Greenwich, N. Y. 14
- Lloyd, Supplee & Walton, 625 Market, Phila. 21
- Shepard Sidney & Co., Buffalo, N. Y. 23
- Turner, Seymour & Judds, 64 Duane, N. Y. 21

Hardware Importers.
- Beam & Murray, 54 Cliff, N. Y. 11
- Boker Hermann & Co., 101 Duane, N. Y. 11
- Field Alfred & Co., 47 John, N. Y. 11
- Hilger & Sons, 87 Chambers, N. Y. 11
- King H. & J. W., 80 Chambers, N. Y. 11
- E. Frith, 16 Cliff, N. Y. 11
- Van Wart & McCoy, 43 Chambers, N. Y. 11
- Turnor R. A., 37 Chambers, N. Y. 11

Hardware Manufacturers.
- Biddle Mfg. Co., 78 Chambers, N. Y. 27
- Enterprise Mfg. Co., Phila. 26
- Hart, Bliven & Mead Mfg. Co., 243 Pearl, N. Y. 26
- Kellogg Wm. P. & Co., Troy, N. Y. 30
- Lane, Gale & Co., Troy, N. Y. 21
- Many F. L. & Marshall, 48 Warren, N. Y. 21
- Middletown Tool Co., 82 Chambers, N. Y. 12
- Miller's Falls Mfg. Co., 78 Beekman, N. Y. 15
- Pratt & Co., Buffalo, N. Y. 23
- Providence Tool Co., 11 Warren, N. Y. 14
- Russell & Erwin Mfg. Co., 45 Chambers, N. Y. 12
- Schweitzer Mfg. Co., 57 Reade, N. Y. 10
- Shattuck W. F. & Co., 113 Chambers, N. Y. 21
- Stanley Works, 58 Beekman, N. Y. 11
- The Wethersfield Novelty Co., Wethersfield, Ct. 26
- Turner, Seymour & Judds, 64 Duane, N. Y. 21
- Union Mfg. Co., 55 Chambers, N. Y. 7
- Williams, White & Churchill, 73 Warren, N. Y. 14
- Wilson Mfg. Co., 37 Chambers, N. Y. 23

Hardware Specialties.
- Biddle Mfg. Co., 78 Chambers, N. Y. 27
- Hasse John A., rear 116 Vanhorn, Phila. 12
- Heaton David, Providence, R. I. 8
- Semple, Birge & Co., St. Louis 32
- Shepard Sidney & Co., Buffalo, N. Y. 6

Helve Hammers, *Makers of.*
- Bradley Mfg. Co., Syracuse, N. Y. 30

Hemp Piston Packing.
- Canfield John & Co., 131 Fairmount Ave., Phila. 25

Hoisting Engines, *Makers of.*
- Otis Bros. & Co., 348 Broadway, N. Y. 9
- Todd & Rafferty Machine Co. 10 Barclay, N. Y. 27

Horse Hay Forks and Fixtures, *Makers of.*
- Nellis A. J. & Co., Pittsburgh, Pa. 32

Horse Nails, *Makers of.*
- Ausable Horse Nail Co., 35 Chambers, N. Y. 3
- Brundage & Co., Middletown, N. Y. 10
- Globe Nail Co., Boston, Mass. 8
- Pratt & Co., Buffalo, N. Y. 23
- Putnam S. S. & Co., Neponset, Mass. 10

Horse Shoes, *Makers of.*
- Burden Iron Works, Troy, N. Y. 4

Hubs and Spokes, *Mfrs. of.*
- Gleason J., 2nd and Diamond, Phila. 12

Hydraulic Jacks.
- Dudgeon Richard, 24 Columbia. N. Y. 25

Insurance, Boiler.
- Hartford Steam Boiler and Inspection Co. 8

Iron Brokers.
- Boynton Geo. A., 70 Wall, N. Y. 6
- Hazard & Jones, 212 Pearl, N. Y. 4
- Petit Wm. H., 72 Wall, N. Y. 4

Iron, Corrugated, *Manufacturers of.*
- Corrugated Metal Co., East Berlin, Conn. 4
- Mosely Iron Bridge and Roof Co., 5 Dey. N. Y. 4

Iron, Charcoal, *Warm or Cold Blast.*
- Quincy John W., 98 William, N. Y. 4

Iron Commission Merchants.
- Blakiston & Cox, 333 Walnut, Phila. 5
- Hand Jas. C. & Co., 614 and 616 Market, Phila. 21
- Hoopes W. Graham, 419 Walnut, Phila. 5
- Malin Bros., 228 Dock, Phila. 5

Iron, Pig, *Importers of.*
- Williamson James & Co., 69 Wall, N. Y. 4

Iron Dealers.
- Abeel Brothers, 190 South, N. Y. 4
- Bonnell, Botsford & Co., Youngstown, O. 4
- Borden & Lovell, 70 and 71 West, N. Y. 4
- Cleveland, Brown & Co., Cleveland, O. 6
- Coddington T. B. & Co., 25 Cliff, N. Y. 4
- Conklin & Huerstel, 99 Market Slip, N. Y. 4
- Fuller, Lord & Co., 139 Greenwich, N. Y. 4
- Fuller, Dana & Fitz, 110 North, Boston 2
- Gardner Wm., 575 Grand, N. Y. 4
- Kimbark Bros. & Co., Chicago 4
- Harrison & Gilloon, 558 to 562 Water. N. Y. 4
- Hart G. A., 208 Walnut, Phila. 5
- Jackson & Chase, 206 and 208 Franklin, N. Y. 4
- Judson B. F., 457 and 459 Water, N. Y. 4
- Matthews Chas. W., 133 Walnut, Phila. 5
- Packard, Goff & Co., Youngstown, O. 4
- Pettee & Mann, 228 and 229 South, N. Y. 4
- Pfifferle Jahn F., 531 Water, N. Y. 4
- Piersons & Co., 24 Broadway, N. Y. 4
- Pope Thos. J. & Bro., 292 Pearl, N. Y. 6
- Quincy John W., 98 William, N. Y. 4
- Richards D. W. & Co., 92 Mangin St., N. Y. 4
- Smith Gam'l G. & Co., 342 Pearl, N. Y. 4
- Warner A. B. & Sons, 28 and 29 West, N. Y. 4
- Williamson James & Co., 69 Wall, N. Y. 4
- Whitney Alfred R., 58 Hudson, N. Y. 4

Iron, *Manufacturers of.*
- Bushong & Co., 31 Beekman. N. Y. 4
- Britannia Iron Works, Middlesbro', Eng. 6
- Burden Iron Works, Troy, N. Y. 4
- Cleveland Rolling Mill Co., Cleveland, O. 6
- Coffin Wm. E. & Co., 8 Oliver, Boston 4
- Ellis W. R. & Co., 17 Batterymarch, Boston 4
- Everson, Graff & Macrum, Pittsburgh, Pa. 4
- Fulton S. & Co., 412 Walnut, Phila. 5
- Jones & Laughlins, Pittsburgh, Pa. 4
- Leonard John, 450 & 451 West st., N. Y. 4
- Lynchburg Iron Works, Lynchburg, Va. 4
- Milwaukee Iron Co., Milwaukee, Wis. 6
- Niles Iron Co., Niles, O. 4
- New Haven Rolling Mill Co., New Haven, Ct. 6
- Old Dominion Iron & Nail Works Co., Richmond, Va. 6
- Oxford Iron Co., 81 Washington, N. Y. 4
- Phœnix Iron Co., 410 Walnut, Phila. 5
- Rowland Wm. & Harvey, Phila. 32
- Sterling Iron and Railway Co., 42 Pine, N. Y. 18

Iron, Swedish, *Importers of.*
- Jessop Wm. & Sons, 91 and 93 John, N. Y. 28
- Mitander Nils, 69 William, N. Y. 4
- Page Ewd. & Co., Boston, N. Y. and Phila. 4

Lace Leather, *Manufacturers of.*
- Stoyle Wm. H., 403 Library, Phila. 10

Lanterns, *Manufacturers of.*
- Dietz R. E., (Tubular) 54 and 56 Fulton, N. Y. 32
- Howard & Morse, 45 Fulton, N. Y. 2
- Shepard Sidney & Co., Buffalo, N. Y. 6

Lawn Mowers, *Manufacturers of.*
- Chadborn & Coldwell Mfg Co., Newburgh, N. Y. 25

Lead and Tin Lined Lead Pipe, etc., *Mfrs.*
- Colwell Lead Co., 213 Centre, N. Y. 2

Locks, *Manufacturers of.*
- Bohannan Wilson, Broadway and Kossuth, Brooklyn, E. D. 8
- Branford Lock Works, Branford, Conn. 12
- Norwich Lock Co., Norwich, Conn. 15
- Romer & Co., Newark, N. J. 8
- Sargent, Greenleaf & Cole, 300 Broadway, N. Y. 15
- Trenton Lock Co., 48 Warren, N. Y. 21
- Yale Lock Mfg. Co., 298 Broadway, N. Y. 23

Machinery, *Makers of.*
- Billings & Spencer Co., Hartford, Conn. 9
- Chapin Machine Co., New Hartford, Conn. 31
- Pratt & Whitney Co., Hartford, Conn. 30
- Rollstone Machine Works, Fitchburg, Mass. 31
- Sellers Wm. & Co., 1600 Hamilton, Phila. 30
- Watson Andrew, 537 Dickinson, Phila. 31
- Whitehill, Smith & Co., Newburgh, N. Y. 24
- Wood Thomas, 2106 Wood, Phila. 30

Machine Screws, *Makers of.*
- American Screw Co., Providence, R. I. 15
- Lyon & Fellows Mfg. Co., Williamsburg, N. Y. 8

Machinists.
- Demarest, Joyce & Co., Brooklyn, E. D. 9

Machinists' Tools, *Makers of.*
- Blaisdell P. & Co., Worcester, Mass. 25
- Blundell Henry & Co., Providence, R. I. 31
- Freeland Tool Works, 558 & 560 W. 34th, N. Y. 31
- Harrington Edwin, 15th st. and Pa. ave., Phila. 31
- Lincoln Geo. S. & Co., Hartford, Ct. 30
- Star Tool Co., Providence, R. I. 25

Machinery and Tool, *Importers of.*
- Churchill Charles & Co., 28 Wilson St., Finsbury, London, England 15

Meat Cutters. *Makers of.*
- Whittemore D. H. Worcester, Mass. 11

Metal Dealers and Brokers.
- Coddington T. B. & Co., 25 and 27 Cliff, N. Y. 2
- Cragin Bros. & Co., 141-5 Lake, Chicago, Ill. 2
- Crane U. O., 104 John, N. Y. 2
- Gregg H. L. Co., 108 Walnut, Phila. 13
- Phelps, Dodge & Co., Cliff, bet. John & Fulton, N. Y. 2
- Pope Thos. J. & Bro., 292 Pearl, N. Y. 2
- Quincy J. W., 98 William, N. Y. 2
- Thomson & Co., 213 and 215 A. A. Water, N. Y. 2
- Van Wart & McCoy, 43 Chambers, N. Y. 2

Metallurgists.
- Britton J. Blodgett, 339 Walnut, Phila. 24
- Drown Thomas M., 1123 Girard, Phila. 24
- Henderson James, 30 Broadway, N. Y. 24
- Maynard & Van Rensselaer, 24 Cliff, N. Y. 24
- School of Mines, E. 49th, N. Y. 24

Mitre Boards.
- Stevens, G. M., Portland, Me. 24

Molders' Tools.
- Carter H. & Sons, 290 Pearl, N. Y. 28

Monuments, *Granite and Bronze.*
- National Fine Art Foundry, 218 E. 25th 6

Mouse Traps. Catchemalive, *Makers of.*
- Dietz R. E., 54 and 56 Fulton, N. Y. 32

Nickel Platers.
- Smith L. A., 42 Mechanic st., Newark, N. J. 14

Norway Shapes, *Rollers of.*
- Rowland Wm. & Harvey, 948 Beach, Phila. 32

Note Broker.
- Gallaudet P. W., 3 and 5 Wall, N. Y. 2

Nuts, Bolts, etc., *Makers of.*
- Ætna Nut Co., Southington, Conn 14
- Arms, Bell & Co., Youngstown, O. 12
- Carpenter David, 402 Water N. Y. 4
- Clark Bros. & Co., Milldale, Conn. 12
- Fuller Lord & Co., Boonton, N. J. 4
- Haskell W. H. & Co., Pawtucket, R. I. 14
- Lewis, Oliver & Phillips, Pittsburgh and N. Y. 14
- Plumb, Burdict & Barnard, Buffalo, N. Y. 32
- Rhode Island Nut Co., 11 Warren, N. Y. 14
- Sternbergh J. H., Reading, Pa. 14

Oilers, *Makers of.*
- White J. H., Newark, N. J. 13

Ore Crushing Machines, *Makers of.*
- Blake Crusher Co., New Haven, Conn. 30

Paints and Oils, *Dealers in.*
- Devoe F. W. & Co., 117 Fulton. N. Y.

Patent Adjustable Elbows.
- Sargent, Greenleaf & Cole, 300 Broadway, N. Y. 15

Patent Solicitors.
- Howson & Son, Phila. and Washington, D. C. 25
- Leggett & Leggett, Washington, D. C. 6
- Whitney J. A., 128 Broadway, N. Y. 25

Picture Nails, etc., *Manufacturers of.*
- Richards T. C. & Co., 47 Murray, N. Y. 8

Pipes, Fittings, etc., *Makers of.*
- Eaton & Cole, 58 John, N. Y. 8
- McNab & Harlin Mfg. Co., 56 John, N. Y. 8
- Nelson, Finkel & Co., 439 E. 10th st., N. Y. 8
- Pancoast & Maule, 227 Pear, Phila. 8
- Chas. Gregg Mfg. Co., 62 and 64 Gold, N. Y. 8

Pipe, Water and Gas, *Makers of.*
- Brick R. A. & Co., 112 Leonard, N. Y. 6
- Graff William & Co., Pittsburgh, Pa. 8
- Morris, Tasker & Co., 15 Gold, N. Y. 8
- National Tube Works Co., 78 William, N Y. 8
- Starr Jesse W. & Sons, Camden, N. J. 6
- Warren Foundry & Mach. Co., Phillipsburg, N. J. 8
- Wood R. D. & Co., 173 Broadway, N. Y. 6

Plane Irons. *Manufacturers of.*
- H. Chapin's Son, Pine Meadow, Conn. 7
- Middletown Tool Co., Middletown, Conn. 10
- Sandusky Tool Co., Sandusky, O. 26

Planes, *Manufacturers of.*
- H. Chapin's Son, Pine Meadow, Conn. 7
- Greenfield Tool Co., Greenfield, Mass. 7
- Ohio Tool Co., Columbus, O. 9
- Sandusky Tool Co., Sandusky, O. 26
- Stanley Rule & Level Co., 55 Chambers, N. Y. 6

Plumbago Lubricator.
- N. Y. Black Lead Works, 172 Forsyth, N. Y. 32

Plumbers' Materials, *Manufacturers of.*
- Carr Wm. S. & Co., 106 Centre, N. Y. 8

Presses, Power, *Makers of.*
- Am. Saw Co., 1 Ferry, N. Y. 32
- Peck Milo & Co., New Haven, Ct. 25
- The Stiles & Parker Press Co., Middletown, Ct. 31

Pressure Blowers. *Makers of.*
- Blackburn, B. F., 11th and Hamilton, Phila. 32
- Sturtevant B. F., 72 Sudbury, Boston 31

Pumps, *Makers of.*
- Douglas W. & B., Middletown, Conn. 7
- Rumsey & Co., Seneca Falls, N. Y. 7
- Union Mfg. Co., 55 Chambers, N. Y. 7
- Valley Mch. Co., Easthampton, Mass. 7

Railroad and Miners' Tools.
- Hogan, Clark & Sleeper, Boston 9

Rails, *Importers of.*
- Congreve Chas. & Son, 104 and 106 John, N. Y. 28
- Smith Gilead A. & Co., 62 Broadway, N. Y. 4

Rails, Iron or Steel, *Makers of.*
- Atkins Bros., Pottsville, Pa. 6
- Cambria Iron Co., Johnstown, Pa. 5
- Cleveland Rolling Mill Co., Cleveland, O. 6
- Evansville Rolling Mill Co., Evansville, Ind. 6
- Griswold John A. & Co., Troy, N. Y. 28
- Milwaukee Iron Co., Milwaukee, Wis. 6
- Springfield Iron Co., Springfield, Ills. 4
- Joliet Iron & Steel Co., Joliet, Ills. 6

Razor Straps, *Makers of.*
- B. F. Badger, Charlestown, Mass. 3

Rolling Mill Machinery, etc., *Manufacturers of.*
- Moore James, Cor. 16th and Buttonwood, Phila. 31

Rolls, Chilled and Sand, *Makers of.*
- Garrison A. & Co., Pittsburgh, Pa. 4

Rules, *Manufacturers of.*
- H. Chapin's Son, Pine Meadow, Ct. 7

Sash Chain.
- Thomas Morton, 15 Murray, N. Y. 21

Saws, *Makers of.*
- Atkins E. C. & Co., Indianapolis, Ind. 10
- American Saw Co., 1 Ferry, N. Y. 10
- Boynton E. M., 80 Beekman, N. Y. 10
- Flint J., Rochester, N. Y. 10
- Disston Henry & Sons, Phila. 10
- McNeice Wm., 515 Cherry, Phila. 10
- James Ohlen, Columbus, O. 10
- Peace Harvey W., Williamsburg, N. Y. 10
- Spear & Jackson, 116 Duane, N. Y. 11
- Wheeler, Madden & Clemson, Middletown, N. Y. 10
- Woodrough & McParlin, Cincinnati, O. 10

Saw Frames, Wood, *Makers of.*
- Peace Harvey W., Williamsburg, N. Y. 10

Scales, *Manufacturers of.*
- Patterson Bros., 27 Park Row, N. Y. 20
- Riehle Bros., 9th near Coates, Phila. 21
- Shattuck W. F. & Co., 113 Chambers, N. Y. 7

Scissors, *Manufacturers of.*
- Rowe & Post, 120 Chambers, N. Y. 11

Screws, *Makers of.*
- American Screw Co., Providence, R. I. 15
- Miles F. S., 206 Quarry, Phila. 14

Screws, *Importers of.*
- Bruce Geo. W., 1 Platt, N. Y. 6
- Field Alfred & Co., 47 John, N. Y. 12
- Gueutal George, 39 W. 4th, N. Y. 10

Self Oilers.
- Nathan & Dreyfus, 108 Liberty, N. N. 32

Shovels, &c.
- Clement & Hawkes Mfg. Co., Northampton, Mass. 6

Skates.
- Graham & Haines, 88 Chambers, N. Y. 26

Smelting Works.
- Reeves Paul S., 760 South Broad St., Phila. 32

Stamped and Japanned Tin Ware.
- Shepard Sidney & Co., Buffalo, N. Y. 28

Steam Hammers, etc., *Makers of.*
- Dudgeon Richard, 24 Columbia, N. Y. 31

Snaps, Harness, *Makers of.*
- Middletown Tool Co., Middletown, Conn. 12

Speed Indicators, *Makers of.*
- Connecticut Cutlery Co., Naugatuck. Conn. 30

Squares, Steel and Iron, *Makers of.*
- Hart, Bliven & Mead Mfg. Co., 243 Pearl, N. Y. 9

Steam Pumps, etc., *Manufacturers of.*
- Carr A, 43 Cortlandt., N. Y. 30
- Hall C. Henry & Co., 20 Cortlandt, N. Y. 8
- Philadelphia Hydraulic Works, Evelina street, east of Third street, Phila. 31

Steam Traps.
- Alonzo L. Jones, 150 S. 4th, Phila. 25

Steel Importers.
- Carr J. & Riley, 82 John, N. Y. 28
- Cocker Bros., Sheffield, England 28
- Congreve Chas. & Son, 104 and 106 John, N. Y. 28
- Hobson Francis & Son, 97 John, N. Y. 28
- Jessop Wm. & Sons, 91 and 93 John, N. Y. 28
- Moss F. W., 80 John, N. Y. 28
- Piersons & Co., 24 Broadway, N. Y. 4
- Sanderson Bros. & Co., 16 Cliff, N. Y. 28
- Sanderson Geo. & Co., 57 John, N. Y. 28
- Van Wart & McCoy, 43 Chambers, N. Y. 46
- Wardlow S. & C., 13 Gold, N. Y. 28
- W. Hawksworth, Ellison & Co., 72 John, N. Y. 28

Steel Manufacturers.
- Anderson & Woods, Pittsburgh 29
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- Jewett John & Sons, 182 Front, N. Y. 25
- Lewis John T. & Bros., 231 S. Front, Phila., Pa. 25
- Union White Lead Co., 26 Burling Slip, N. Y. 25

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- Philadelphia Wire Works, N. 5th, Phila. 2
- Prentiss Geo. W. & Co., Holyoke, Mass. 2
- Townsend W. P. & Co., Pittsburgh, Pa. 4
- Washburn & Moen Mfg. Co., Worcester, Mass. 2

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- Howard & Morse, 45 Fulton, N. Y. 2
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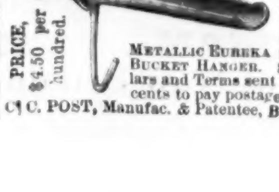

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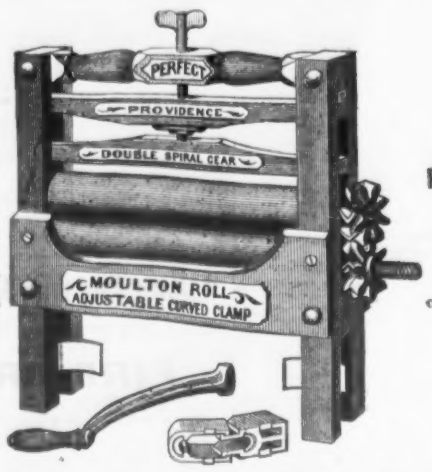

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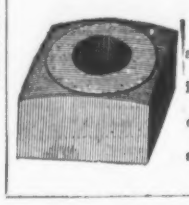

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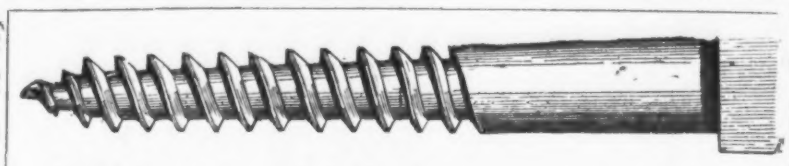

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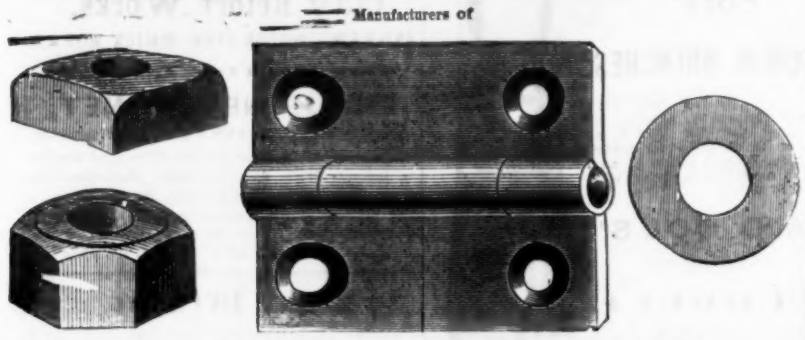

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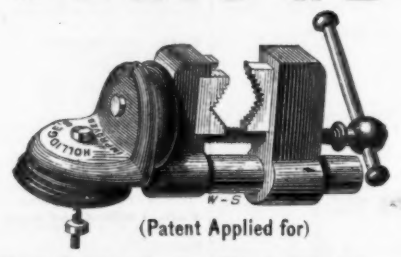

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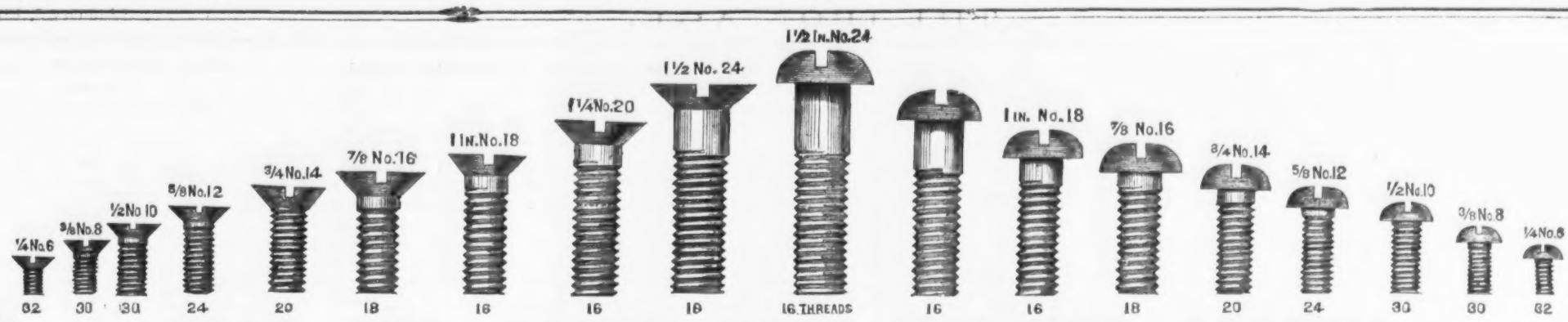

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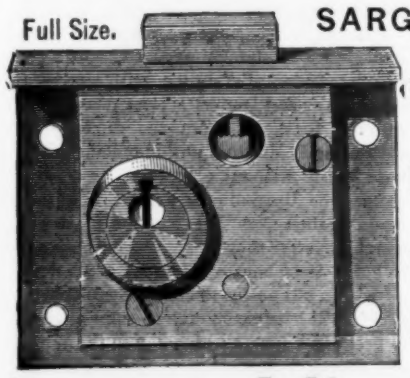

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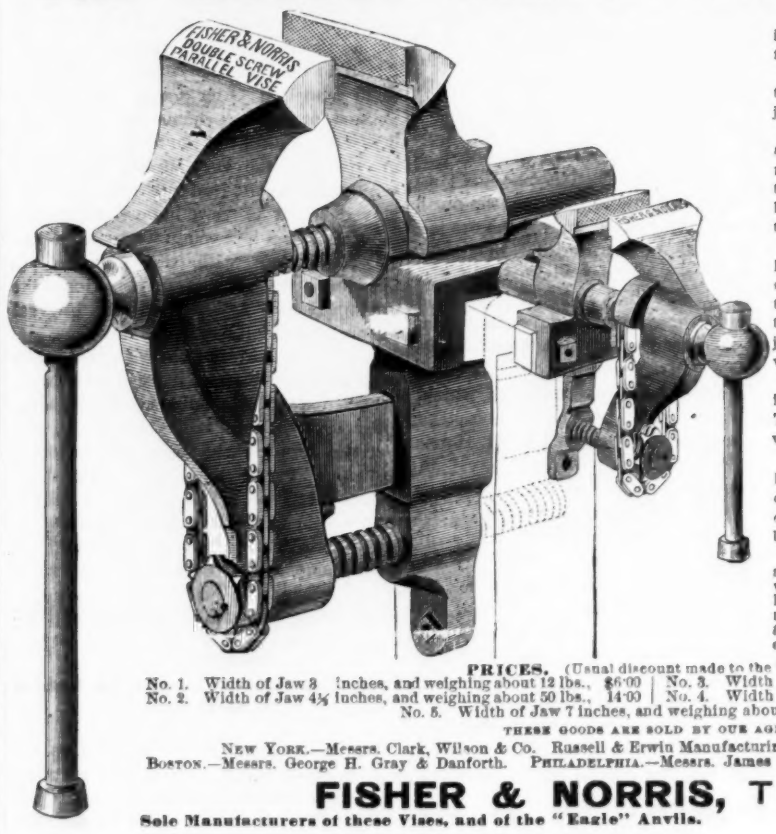

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The Business Outlook.

There is much cause to congratulate our readers upon the business outlook for the new year. The comparative lightness of the fall trade has been, to some extent, made up by the subsequent purchases of dealers whose stocks needed replenishing, but everything is favorable to an early, active and profitable spring trade, and manufacturers are already making extensive preparations to meet the probable demands upon them. Comparatively few of the workshops and factories temporarily closed during the panic are still idle, and the working classes have suffered much less from the industrial paralysis than was expected. It is, perhaps, a little too soon to feel the change of the tide which turned with the new year, but every indication is favorable, and we know of no cause, unless it be some unwise and hurtful action on the part of Congress, that can disappoint the business promise of the opening season.

One important consideration, as affecting the future business, which we do not think is generally taken into account, is the fact that there is no longer any apprehension of coming financial disaster. For several years past far-sighted and prudent merchants have anticipated a panic, and for two or three years it has been evident that the trouble would begin with the collapse of the speculative railroad construction bubble. No one has known when to expect the coming panic, but the class of croakers, who always keep themselves in a position to say, "I told you so," when anything serious happens, have been predicting it ever since the close of the war. These predictions have not been without influence in making careful and conservative men timid and apprehensive of the future. This fear is now set at rest. We have experienced the long-expected "collapse," we have passed through it comparatively unharmed, and experience teaches us that we are not likely to have another for some years to come. The periods between panics in this country have hitherto averaged seven years in duration, and between the last two a period of about sixteen years intervened. We may, therefore, anticipate an uninterrupted prosperity for several years to come, and with judicious Congressional action on the currency and other questions of vital importance, we should, during the next five years, experience a healthy, sustained and evenly developed material progress. The confidence which this thought inspires is favorable to all branches of business in the immediate future, and with the retail markets in all parts of the country scantily supplied with stocks of staple goods, manufacturers and wholesalers may reasonably expect to make up during the first quarter of the new year for their losses and disappointments during the last quarter of 1873.

The Facts About Lake Superior Tin.

In this journal of February 20, 1873, there was given, under the title of "A Trip in Search of Tin," a detailed description of what was then believed to be one of the most valuable mineral discoveries ever made on this continent. We refer to the exploring expedition under the auspices of the "Otter Head Consolidated Tin Land Pool," of Detroit, Michigan, to the neighborhood of Otter Head, Canada, on the north shore of Lake Superior. At and around Otter Head, the association named owns nearly 40,000 acres of land. The expedition, which was conducted by, and almost wholly composed of, members who had invested money in the "Pool," left the Sault Ste. Marie Canal at daylight of November 22, 1872, and reached Marquette, Michigan, at noon of the 25th of that month, having inspected parts of the tin ground. The examining party seemed entirely satisfied with the results of their expedition, and when they reached Detroit—the first place at which they could obtain the necessary chemicals—they immediately proceeded to make exhaustive analyses of the ore specimens they had brought from the veins examined on November 24th. A gentleman who, at the earnest solicitation of a member of the "Pool," accompanied the exploring party, wrote the account of the trip which appeared in this journal. He never at any time owned any of the stock, and his letter which we published was based—so far as statements about the discovery were concerned—on the official report of Hon. William Harris, a member of the Michigan legislature and a man whose opinions on tin ore are highly valued, for the reason that he was for fifteen years a tin-miner in Cornwall, England; and on the official report of Mr. A. F. Jennings, who was at that time the metallurgical chemist of the "Detroit Mineralogical, Mining and Assaying Association." As far back as December 29, 1871, the late Professor Torrey had officially reported that he had "assayed the sample of tin ore from the north side of Lake Superior;" that "the ore is a true tin stone, or Cassiterite;" that "the average of the samples yielded 33·3 per cent. of metallic tin," and that "it would be easy to concentrate the pulverized mineral to a considerably higher percentage of metal." Mr. Jennings, in his more elaborate report—in the course of which, by the way, he takes occasion to commend in very high terms the report of Mr. Harris—gave the "average of four assays" of this Otter Head tin ore as being "37 per cent." Messrs. Drown and Corliss, the well known metallurgical chemists of Philadelphia, under date of January 25, 1873, officially reported that they had "examined the tin ore from Otter Head, Lake Superior," and had found the "mean of two analyses" to be "47·93 per cent."

There were other considerations bearing on the subject which were conversationally discussed by the experts between the date of their exploration and that of the publication of the first official report, and the unanimous conclusion was that the Otter Head property was second in value to none other in the world. Ten millions of dollars was named as a cheap price for land the total cost of which did not exceed $55,000. The gentleman whose letter we published, waited three months before writing his account, to the end that he might embody therein the results of the official reports. These reports created great excitement in mining and financial circles, and it did not abate until last June, when the faith of investors began to falter. During that month another expedition went to Otter Head, and remained two weeks or more. It returned with the report that even the existence of tin there in paying quantities was extremely doubtful. But there were still left persons who were determined to cherish the hope of enormous wealth, and they shortly afterward organized another expedition, which was more thorough in its examination of the Otter Head lands than any other had been, and which was probably the last that will ever visit that shore of illusion. These last named parties returned with a report to the effect that, in a few spots, the outcroppings of veins showed a resemblance to tin ore, but that the yield of these veins would evidently be less than one-half of one per cent. of metal; and that in regard to the principal vein examined on November 24, 1873, the experts of the exploring party were either willfully fraudulent in their representations, or else the victims of a swindle which, for magnitude and effrontery, has never been surpassed. This last party reported that they had found, buried in the earth remote from the principal vein, a number of kegs—some empty and some unbroken—of tin ore, which was absolutely similar in appearance and yield to that taken from the vein; that the vein itself had been packed or "salted" with ore from the kegs found empty, and that some persons in the party claimed to be able to identify the said kegs as having been transhipped at the Sault Canal from an American to a Canadian steamer, and landed at Otter Head in October, 1872. These persons also claimed that the kegs were duly entered at the New York Custom House, and that they came from Liverpool by steamer. The unearthing of these kegs created in some minds and confirmed in others the conviction that a colossal fraud had been attempted by some one, and the man charged with having attempted it admitted that he knew of the kegs having been taken there, but that his purpose in permitting them to be taken to Otter Head was to place himself in a position to prove the property worthless, if his associates did not allow the rights in the tin lands for which he contended. He confessed that the vein above referred to had been "salted" from the kegs, but maintained that there are other tin veins equally rich and of natural formation on the lands. The last expedition, however, found no trace of them.

The facts in regard to these kegs are as follows: A person whom we could name went to Liverpool in the steamer City of Montreal in May or June, 1872. Repeated interrogatories by a director of the "Pool" failed to discover the purpose of his errand; and among his intimate friends none knew of any business he could possibly have in Europe on his own account. It has long been authoritatively reported, and the report is now firmly believed by many stockholders, that this person returned from England between the middle of September and the middle of October, 1872, that the kegs were entered through the New York Custom House in his name at the time of his return, and that he accompanied them from New York at least as far as the canal, where they were transferred to the Canadian steamer which put them ashore at Otter Cove. He is not obliged, of course, to state what his business was in Europe at the time named; but in view of the very strong suspicions against him as the leader of the "salting" movement, it is very important for his reputation that he explain wherein he had no connection with the purchase in Cornwall, the ocean transportation, the Custom House entry here, and the internal shipment and delivery of the ore kegs.

It is not a matter of surprise that many persons more than usually expert were deceived by the tin bubble. Messrs. Jennings, Drown and Corlies had only to analyze the samples sent them, and in doing so their responsibility ceased. The same is true of Prof. Torrey, and we believe that no one doubts the entire honesty of Mr. Harris in this matter. But whoever is to blame, Otter Head will long be remembered by the unfortunate investors and their heirs as a land of fictitious treasures and buried hopes.

Protection Against Losses from Sudden Strikes.

The recent strike of the locomotive engineers, resulting in a serious interruption of travel and traffic, and in danger to life and property, furnishes a basis for the only good argument which we know of in favor of the enactment of a national code of laws for the regulation of railroad management. For open and flagrant violations of the common law of which the strikers may have been guilty, especially in the West, the State governments are competent to prescribe and enforce adequate penalties. To obstruct the passage of a train, misplace a switch, assault a peaceable citizen for doing his duty, or put in peril the lives and limbs of persons without just provocation, are crimes which call for severe penalties under existing laws. If these laws are not enforced, the fault lies with the local authorities. Not so, however, with a peaceable strike. To refuse to work is not a violation of any law, and under no laws of which we have any knowledge can engineers or other railroad servants be held accountable for simply quitting their posts, singly or in a body. But the public interest demands that they should be restrained from so doing except upon giving their employers sufficient notice to enable them to fill their places. In a country dependent for much of its commercial and industrial prosperity upon free and unrestricted interchanges by rail between the States, it is of the utmost importance that the danger of a general strike of responsible railroad servants should be averted by the enactment of a law prescribing adequate penalties for quitting work without just cause, and without notice to employers. Such a law, to be practically operative as regards roads traversing two or more States, must be national in its character, and while we deprecate Congressional interference with matters coming under the jurisdiction of the State legislatures, we cannot but think that an Act of Congress for the protection of the traveling and business public against interruptions of railroad operations resulting from strikes of railroad employes, would be of national benefit.

The importance of defining, clearly and unmistakably, the relations between employers and servants, by means of impartial and well considered general laws, has not been as fully appreciated in this country as it should have been. Since the trade unions have acquired so much power for mischief, laws generally similar to the Masters' and Servants' Act of Great Britain have become necessary in every State depending upon manufacturing for its prosperity. Under the present system an employer may lose his entire working force without an hour's notice, often because an order for the immediate cessation of work comes to his men from some irresponsible committee or junta, possessing no authority which is recognized by the law. We have known of instances in which puddlers have thrown down their tools and gone off, leaving heats to spoil in the furnaces and entailing upon their employers serious losses for iron wasted and costly repairs rendered necessary. Hundreds of cases have come to our notice in which men have struck without warning, leaving work unfinished which their employers were under contract to complete within a given time, and bankrupting such as had locked up their capital in work already done. These are matters of common occurrence in ordinarily prosperous times, and employers are certainly entitled to some protection against outrages of this character. A well considered law, making all contracts between masters and men binding upon both until after the expiration of a ten days' notice, would do no one injustice, and would protect the workingmen from arbitrary and peremptory dismissal without cause, as well as employers from losses resulting from strikes without notice. There is no reason why a puddler who throws down his tools and leaves his furnace charged, should not be made to pay his employer damages for the loss of the iron and injury of the furnace, and no reason why an employer who suddenly deprives a man of his situation without just cause, should not be required to pay him wages until he shall have had opportunity to seek employment elsewhere. We would offer these suggestions to manufacturers and employers generally, as showing the importance of an effort on their part to secure the passage of laws by the legislatures of their respective States for their own protection and the protection of labor. We shall have more to say upon this subject in a future issue.

An Iron Trades Congress, embracing all branches of the iron industry, will convene at the Continental Hotel, Philadelphia, on the 5th of February, and continue in session two days. The pig, bar, plate, nail, rail and steel interests will be represented, and it is expected there will be a free interchange and comparison of ideas on all subjects of interest to iron manufacturers. We hope the congress will be well attended by representative men, and that associations in all parts of the country will send delegations. The subjects discussed will undoubtedly be of present and permanent interest, and an effort will probably be made to crystalize the various trade associations into one common organization, with as many sections as may be desirable. This would establish a national iron exchange, and the benefits of such an institution would be felt in all branches of the trade.

We understand that the representatives of the sewing machine interest are about to make another vigorous effort to secure the passage of an Act of Congress granting a further extension of the patents under which the business has been made a great monopoly. If so, we certainly hope they will fail to accomplish their purposes. We have had about as much of this extension business in the case of sewing machine patents as we consider beneficial, and if the business were thrown open to all who might choose to enter it, no one owning or interested in patents which have legitimately expired would have any just grounds for complaint. Companies which make machines for twelve dollars and sell them for sixty-five, naturally desire to keep the business a close monopoly as long as they can, but the public have some rights in this matter which are entitled to consideration at Washington.

Begin at Home.

The New York Cheap Transportation Association propose to send delegates to a meeting to be held at Washington, on the 14th inst., to draw up and talk over a petition to Congress calling for certain necessary reforms, among others the repeal of the law requiring canal boats to pay tonnage dues. It is probable they will also talk over some scheme for a national railroad between New York and the West, and perhaps ask Congress to build such a road. This is all well enough, in its way, especially as regards the effort to secure the exemption of canal boats from the tonnage tax, but before spending much of either time or money in the vague hope of reforming national evils, would it not be well for the friends of cheap transportation in New York to begin at home and reform certain abuses which are peculiarly local in their character? For example, the commercial interests of New York would be promoted more by providing facilities for the cheap and expeditious handling, transfer and storage of merchandise, than by the building of a dozen new railroads to the West. It costs more to cart a barrel of flour from the North River to the East than it does to bring it to the North River from Buffalo. Here is an evil to reform, and it cannot be too soon taken in hand. Again, it costs more to bring a case of linen goods from Jersey City to the warehouse of the merchant that sells it, including custom-house charges, but not including duties, than to bring it from the manufactory in Ireland to Liverpool or other port and ship it to Jersey City by steamer. As an instance of the cost attending our present system of receiving and handling merchandise, we may mention, on good authority, that the business coming to the Pavonia Ferry Company on account of the White Star Line of steamers, is over a thousand dollars a month. A very large part of this represents a tax upon merchandise and trucks.

We might multiply instances of this kind, but it is scarcely necessary to do so. Our merchants are familiar with our present cartage and storage system, they have suffered for years from the rapacity of custom house and quarantine officials, they have borne without complaint or remonstrance the discriminations of existing railroads against New York in the matter of freights, and if they want reform the place to begin it is here. When we have done all within our power to cheapen transportation it will be time enough to ask Congress to provide a new rail highway to the West. The Cheap Transportation Association includes many of our most enterprising and influential merchants, and we are well satisfied that any well digested scheme of local transit and storage reform to which they might give approval, would command the hearty support of press and public. Let the experiment be tried, at least.

The transfer of the coal lands belonging to the Lehigh Coal and Navigation Company, to the Honeybrook Coal Company, and through the latter to the Central Railroad of New Jersey, has, during the last few days, occasioned much comment and not a little wild speculation. The combination of these companies cannot properly be called new, as they have been practically working together for years; and the present arrangement is merely the putting into a practical working shape interests that have been closely allied for a long time. The combination will certainly control the product of a very large and important coal field, but it remains to be seen whether the influence they will bring to bear on the market be other than that hitherto exerted by them. They may join hands with the Reading Coal and Iron Combination, or take an independent position alongside the Pennsylvania Railroad Company; but in either case it is safe to predict that their action will be guided, in a great measure, by the same policy which has, during the last year, kept the coal trade so steady in the midst of panic and violent fluctuation in other branches of business.

New Publications.

NOTES OF A METALLURGICAL JOURNEY IN EUROPE. By John A. Church. D. Van Nostrand, New York, 1873.

This work, the bulk of which appeared in the *Engineering* and *Mining Journal*, is evidently the result of careful and intelligent observation, and contains a great amount of accurate and interesting information concerning some fields of labor not hitherto investigated by Americans. The details of mining operations, and smelting and refining processes, with analyses of ores, will be found of great interest to the student of metallurgy

VENTILATION OF BUILDINGS: By W. F. Butler. PROPORTIONS OF PINS USED IN BRIDGES: By Chas. Bender, C. E. D. Van Nostrand, N. Y., 1873.

These little volumes constitute Nos. 4 and 5 of Van Nostrand's Scientific Series. Mr. Butler's treatise on ventilation is a well considered and valuable contribution to the literature of a subject which is at present engaging the attention of many of the greatest scientific minds in the country.

Mr. Bender's treatise on bridge pins possesses less of popular interest, but presents much valuable and condensed information of a technical nature which merits the careful study of engineering students and practical bridge builders.

Scientific and Technical Notes.

The *Engineer* describes a

NEW METHOD OF ECONOMIZING FUEL

employed at the works of Messrs. Leather, Matthews & Co., engineers, of Broughton Road Iron Works, Salford, as follows:

The other day we had the opportunity of witnessing the effects of using cinders and creosote oil as fuel under the boilers which drive their machinery, and the particulars of which, as kindly furnished to us by a member of the firm, we have now the pleasure of giving to our readers. It may possibly be remarked that the data given can scarcely, as they extend over so short a period, be looked upon as very conclusive, but we may add that we are assured by Messrs. Leather, Matthews & Co. that the economy still continues, and, in point of fact, nothing can be more convincing of the benefit obtained than that a firm of practical engineers should feel themselves amply justified by the financial results of the arrangement in continuing the use of this fuel. The figures given us with reference to the cinders and creosote oil are as follows: In April, 1872, the engine in question was burning 1·9 cwt. of coal at 7/ per ton, or 8d. per hour, as cost for running engine; indicated horse-power being 22. From noon on Tuesday, April 22, 1873, to 6·30 p.m., Tuesday, April 29, the same engine, with considerably more load, ran 88¼ hours, consuming 58 cwt. of coal and 60 gallons of creosote oil; the cost thus being, per hour, three-quarter gallons oil, 2¼d. per gallon, 1½d.; 66 cwt. of coal, at 10d. per cwt, 6½d.—total, 8d. per hour. But the point to be noticed here is that in one case coal was valued at 10d. per cwt., and in the other at something less than 4½d. The best proof of the real saving lies, however, in the fuel cost-book of the firm just named, the figures in which we find as follows: For the six months commencing November, 1872, and ending April, 1873, they paid for coal £100. 11/; in the six months ending October, 1873, they paid for coal £52. 19/4, and for creosote oil, say, £7. 10/—£60. 9/4, the effective work done by the engine being, on account of extra machinery added to the shop, considerably more during the latter period than the former. These figures speak for themselves; and we can ourselves testify to the fact that neither the grates nor the firebars of the boilers have been in any way altered from their original form to suit this fuel, the *modus operandi* being simply to wet the cinders, mix them with wet coal, and then saturate the whole with the oil. At Messrs. Wright, Turner, & Co., Kingston Mills, Pendleton, the manager, Mr. Warburton, has employed the same oil, with, as we understand, favorable results, and he has arranged there a remarkably ingenious cistern and tap, by which the exact quantity of oil found necessary and most advantageous can easily be supplied. The set of boilers to which this adjustment was fixed were unfortunately not at work on the day of our visit, and although Mr. Warburton fully explained his plan to us, we did not see it in actual operation.

The curious property possessed by

CHINESE METAL MIRRORS

of reflecting figures put upon the back by way of ornamentation, has long been a matter of wonder to persons ignorant of the reason for the phenomenon. Their manufacture is described as follows:

Chinese mirrors are castings of a somewhat porous alloy. Before the reflecting face is finally polished, it is laid on an anvil, and the embossed designs or figures at the back well hammered. This, of course, condenses and closes the pores of the metal in these parts, and, in consequence, when the face is finally polished, the metal in front of the design has its power of reflecting light increased, and so gives rise to the fallacious idea that the pattern "shines through" the metal. Old coins, in which the letters or dates have become illegible through wear or corrosion, may oftentimes be deciphered by polishing the surface with a wheel-brush and fine emery. The reflected image, in some cases—particularly with bronze coins—will then show the figures distinctly. In a stamped coin these are darker than the rest of the disc, because the raised portions were less condensed. Numismatists have long been aware that when there is a difficulty in deciphering a coin almost obliterated, they can frequently determine its date and character by heating it in the dark to a red heat sufficiently to make it self-luminous; the figures, though worn to the surface, having a different density, throw off more or less light, and can thus be distinguished.

Prof. Gilbert Govi, of Turin, has thoroughly investigated the matter, and come to the conclusion that the part of the mirror which is not in relief at the back is very thin, and consequently, upon pressure being applied when polishing equally all over it, those parts which correspond to the figures are slightly pressed outward, and preserve their prominence upon the pressure being withdrawn. The light striking upon these prominences is naturally more diffusely reflected than that which strikes upon the corresponding depression. Hence the curious appearance of the figures dark upon a bright ground. If a mirror which displays them well (and few do so) be examined between the eye and the light the slight curve of the surface may be detected, and the phenomenon may be exaggerated by pressing the figures with the hand from behind while holding the mirror up to the sun. Good magic mirrors are extremely scarce, and command a high price. This is owing, in some measure, to the difficulty of obtaining the metal homogeneous, so that when the polisher arrives at the tenuity proper for displaying the figures, the elasticity of the ground of the pattern may be equal all over the surface of the plate.

A praiseworthy movement is now on foot in Paris, which has for its object to provide

CHEAP HOMES AND WORKSHOPS FOR MECHANICS

on the following plan: A large plot of ground has been secured in the heart of the workman's quarters of St. Antoine, and now a complete street, containing nineteen large houses, is constructed and bears the name of Rue de l'industrie St. Antoine, connecting the old Faubourg St. Antonie with the Boulevard Voltaire, formerly Boulevard Prince Eugene. All these houses are combined dwellings and workshops, and the arrangement for light and ventilation, and for the supply of water and gas, have been carefully secured. Each house has its *concierge*, or porter, as usual in Paris, and it is the business of this functionary to keep the court and staircase of the house clean, to take in letters, and to give generally answers to all inquiries; in addition to this, however, the *concierge* has a sort of police power with respect to the removal of furniture, the hours of admission, &c. A useful innovation is borrowed from the chambers of London and other places, in the provision in the entrance lobbies for the painting of each lodger's name and business, with the number of his floor and rooms. The motive power is supplied by a steam engine of 200 horse-power, which, with the shaftings, &c., have been supplied by Messrs. Cail & Co., of Paris. The power is distributed throughout the houses on both sides of the street, in the basement, ground, *entresol*, the first floors, and, if found needful, power will be extended to the other parts of the building by means of compressed air, but this is a matter for future consideration; and a patent has been taken out for the future application of the escaped air to ventilation and blowing purposes. The apartments and workshops are not yet all ready to receive their tenents, but the applicants are numerous, and have already more than one hundred and sixty occupants. The principal occupation of the Faubourg is that of furniture and cabinet making, and most of the tenants belong to some branch of those trades, which bring in their train wood turners, fret cutters, metal workers, and other industries; but there is a host of trades in Paris in which little masters still exist, such as bronze turners and fitters, and the makers of the thousand and one nicknacks known as *articles de Paris*, and small wares of all kinds. It should have been mentioned that amongst other conveniences is the supply of hot water to each tenant. Another good point about the undertaking is the aspect of the new industrial street, which is pleasant and light, and has none of that penetential, hospital-like appearance which so unpleasantly indicates model lodging-houses in general. Already a baker, a wine shop keeper, and an apothecary have opened their shops there, and baths form a feature in the new street, which is only the first of those which are to form the industrial city of St. Antoine.

The medal *pro literis et artibus* has been given by the Emperor of Austria to Rev. Malleny Hanson for an ingenious apparatus known as

THE WRITING BALL,

which is described as follows: The instrument consists of a half sphere of gun metal, pierced with radial apertures to the number of 52, all converging to the center. The half-sphere rests on a frame firmly fixed to a bed plate. Portions of the frame can be removed to obtain access to the lower parts of the apparatus. Each of the holes in the half sphere or ball has a piston ground off horizontally at its bottom, upon which is engraved a letter or figure. When a piston has been pressed in, a spiral spring raises it when it has been released. These pistons, when pressed down, impinge upon a level writing plate, which can be moved through the center of the writing ball. This table has four wheels running upon rails, which rails again are fixed to another movable frame. The plane of the movement of the lower frame is at right angles to that of the upper one. Beneath the upper table is fastened a rack gearing with a spur-wheel fixed on to a sleeve on a spindle, upon which it slides by means of a feather and a groove. The spindle at its extremity carries a tooth-wheel and a pinion; the latter gears with a tooth-wheel on the fuse spindle of an ordinary clock spring. Behind the tooth-wheel, attached to the spindle, are arranged two electro-magnets, the armature of which carries an escapement working into the tooth-wheel. The terminals are fixed into the bed-plate. A bell having a hammer moved by a peg on the scape-wheel is attached to the apparatus. The ball or half sphere has a semi-spherical cover, which rests on the ball by insulating pieces of ebonite. Springs are so attached to this cover as to form a connection with one pole of the battery when a knob or piston is pressed, the other pole of the battery being connected to the ball itself. Upon the writing table is arranged a kind of tympan to hold a sheet of white paper by its edges. Upon the white paper is laid a sheet of carbonized paper. On pressing one of the knobs the lower end of the piston impresses a type on the paper; the knob then touches the spring under it, whereby electrical contact is established. The electro-magnets then attract the armature, causing a movement of one tooth of the scape-wheel actuated by the clock spring. The motion is consequently communicated to the spindle and to writing table and carriage, which is thus moved into a position suitable for the printing of the next letter. The pistons corresponding to the letters to be printed are depressed in their order, and the letters appear on the paper in a line vertical to the operator. Speed is considerably augmented by the arrangment of the knobs or pistons into groups, easily covered by the whole of the 10 fingers. When a line of printing is completed the hammer strikes the bell as a signal that a new line should be commenced. This is effected by pushing the carriage of the writing table forward or backward by hand the distance required between the lines. That this distance may not be exceeded and shall be attained, a rack-and-pinion movement is employed. After some practice the pistons can be worked at the rate of ten per second, or three or five times quicker than ordinary writing with a pen. All kinds of paper can be employed, and of any thickness, by means of a vertical adjustment of the writing ball. If 10 layers of thin paper are employed, with interposed layers of carbonized paper, all 10 pieces receive the same impression. By passing these 10 impressions with interposed tissue paper through rollers, double the number of copies are obtained.

Messrs. Knott, of the Highfield Steel Works and Heeley Tilt Rolling Mills, have lately introduced a plan for

UTILIZING THE WASTE HEAT OF MELTING FURNACES,

which is well spoken of. They have erected in their new works a 24 hole melting furnace, the flues from which pass under and around two 28 feet by 7 feet boilers which are erected near. The waste heat from the melting furnaces is conveyed through these flues to heat the boilers, and sufficient steam is thereby generated to work two trains of sheet and rod rolls. No more fuel is consumed in heating the furnaces than under the old plan, and the machinery of the rolling mill is, therefore, worked without the least cost. The waste heat, when not required for the boilers, can be conveyed away into a waste flue. By this plan the Messrs. Knott hope to save £1000 a year.

TIN IN AUSTRALIA.

Recent advices from Australia warrant the belief that, at no distant day, that island will derive a very much increased commercial importance from its production of tin. In the Koeting field the ore occurs as black, gray, yellow, and red or ruby tin, and is often coated with oxide of iron; small garnets are frequent, and specks of gold are occasionally met with. The ore contains an amount of tin varying from a few ounces to several pounds weight to the ton of stuff. Excellent prospects have been obtained over an extensive district in the Koeting field, and the development of tin deposits is looked forward to with confidence as likely to add materially to the industrial wealth of the colony. In the first nine months of 1873, ending September 30th, the imports of Australian tin into England have amounted to about 3520 tons of ore, as against only 200 tons in the corresponding period of 1872. Such an immense increase in the Australian supply must, of course, greatly affect the state of the market; and it would have affected it more powerfully if the supply of the Straits and Cornish tin had not this year so largely decreased. The imports of Straits were only 3466 tons, as against 5205 tons in the first nine months of 1872, showing a diminished supply of 1759 tons. There is also a falling off in the amount of Cornish tin produced, but not enough to balance the large supplies from Australia. Prices are down, because this increase comes just at the time when demand has fallen off. In the first nine months of 1873 the total deliveries from London and Holland of foreign tin, including Banca, Billiton, Straits and Australian, amounted to no more than 7917 tons, as against 9409 tons in the corresponding months of last year, showing a decrease in the deliveries of about 1500 tons.

Some time ago a bill was introduced in the National Assembly regulating the manufacture of

DYNAMITE IN FRANCE,

and giving the government a monopoly of the business, as it now has of the manufacture of gunpowder. The matter was referred to a committee, which have extended their inquiries into all the financial and commercial points of discussion, weighing the advantages and disadvantages that might respectively arise, from either giving the government a monopoly, or by throwing its manufacture and import open. The general conclusions to which they arrived were as follows: 1. They considered that the law regulating the production, &c., of gunpowder should not be extended beyond the limits allowed by that law. 2. That nitro-glycerine, of which dynamite is a modification, has none of those chemical elements nor composition which legally distingnish gunpowder. 3. That it is necessary to construct a special law, regulating the industrial uses of certain chemical explosive compounds; and not giving a monopoly of their manufacture to the state. Other provisions would tend to facilitate the general use of dynamite, &c. The law laid out by the commission, in place of that suggested by the Minister of Finance, proposes to establish a tax on dynamite and other explosives employed for industrial purposes, not named in the law regulating the manufacture, &c., of gunpowder. The tax proposed is 1 franc 50 cents per kilogramme of dynamite. The manufacturers are to be subject to the law which regulates dangerous manufactures. Licenses may be obtained on certain conditions for the manufacture and use of nitro-glycerine, also for the production of dynamite, and other explosive substances. The tax on nitro-glycerine and other explosive compounds is fixed at 2 francs per kilogramme, and that on the importation of dynamite at the same amount, by the report of the commission, as at once likely to be productive to the national finances, and not affecting commercial interests injuriously.

PHILADELPHIA CORRESPONDENCE.

PHILADELPHIA, Jan. 5, 1874.

The first week in the new year, although split by a holiday, has offered so much of general and local interest, that in order to include all the items the allusion to each must be literally "brief mention."

The interference with business by the strike of the locomotive engineers of the Western roads has been an exciting topic of discussion, coupled as it was by an expected strike on the main line and the New Jersey division of the Pennsylvania Railroad. Fortunately this was avoided, but, had it occurred, would have caused both great inconvenience and damage to the public. There are three thousand men employed on the New Jersey division of the Pennsylvania Railroad, and fifteen trains are run daily between here and New York, beside freights. Seven thousand through passengers, it is computed, use the road daily, while the local travel is many times that number.

There is something to be said, and more to be done, about this strike, and the results of it, which exposed life and property to damage at the West, if not here. The broad assertion can be, and must be made, that all such strikes are criminal—crimes against society—and outrages on the body politic. The fact that the company has a right to decide what it shall pay for services rendered, and the men to fix the price of their labor, is outside the question. Neither or both have any greater right to quarrel at the expense of the public than two disputing hackmen to temporarily block a highway. The equity of the case is perfectly clear. The companies have obtained valuable franchises for a specific consideration to be performed, viz.: The transportation of passengers, mails and freights in safety and without delay or obstruction. Their quarrels with their subordinates must be restricted within well defined legal limits. Conspiracies to enhance the price of necessaries of life are punishable legally, and cases precedent are numerous where they have been punished, as in flour and grain corners, coal combinations and sugar rings. The railroad has become in our day quite as much a necessary of life as the article it transports, as the only means, in many cases, of obtaining such articles. In short, this whole theory of strikes is fast becoming insupportable to society, and must be regulated by the clear and proper remedy which we have in the laws. The legislators who, for political purposes, have hitherto catered to this feeling, must render their services in the future for the benefit of all. We clearly need, and the general feeling indicates that we shall soon compel, the enactment of some such law as the "Masters and Servants' Act" of Great Britain. The title may be unpalatable to the working classes, but we are all either masters or servants, and most of us both. Such a law is the only remedy for the evil which will, if not restricted, bring business anarchy upon us, while the remedy would be of equal justice to employer and employee. The subject is a fruitful one and will be reverted to.

The Allentown *Chronicle*, a paper well posted on the iron interests of its region, has received from a 'leading iron master" in conversation, the statement that most of the furnaces of the country are blowing in and orders for finished irons increasing. So far, good. The same iron master predicts, however, that next winter the dullness in iron will equal that of the present, and that there will be more iron made this spring than there will be next fall. He bases his reasoning on the fact that the Iron and Steel Association has stated there are 864 blast furnaces in the country in working order, capable of producing four million tons of pig iron—a quantity greater than the country can consume at present, and these furnaces, encouraged by the present demand, will go to work, so that before next fall the demand will be supplied, and another cessation will be occasioned. I give the *Chronicle* words as printed. Now, one need not be "a leading iron master" to dispute these statements. The report of the secretary of the Association referred to gives the actual number of furnaces at 636—not 864—while, in point of fact, there are something near 750 as the actual number capable of making iron in 1873, not counting unfinished stacks. This is, however, immaterial to the question, the productive capacity being, as stated by Mr. Swank in his very thorough and able report, over four million tons. The point we controvert is, that this is a quantity greater than the country can consume. One of the principal errors of our statistics has been that we have persistently ignored the consumption of iron by the different industries. We collect, with great labor and very efficiently, the figures of pig and bar and rail production, and never trouble ourselves how or where it goes. It may be broadly stated that this country has a capacity of consumption for at least *five million tons of iron annually* in busy times. It only requires a little investigation of the different trades to demonstrate this. We take no note of our car works at all, and yet the Ohio Falls Works, at Jeffersonville, Ind., consumes annually more than the product of two average sized blast furnaces and two *large* size rolling mills. We do not consider the stove trade a large one, while there are some 300 works consuming from 6000 for the largest to 300 tons per annum for the smallest. The pipes, cast and wrought, require annually at least 400,000 tons, if not more. One agricultural implement works consume near 10,000 tons, while there are thousands of small trades, in the aggregate large consumers, which are never noted.

The statistics of the Iron and Steel Association show that the product of pig iron in 1873 was near 2,500,000 tons. The importation of all kinds of iron for the past year will not exceed, if it equals, 300,000 tons. The total production and importation is consequently under 3,000,000 tons, or thereabout, adding the bloom product. There must be fully 10 per cent. of this amount to be added for scrap worked, which will counterbalance the loss in pig worked, and leave our figures the same. Now, assuming these figures to be approximately correct, we have, at least, three million tons consumed in the United States in 1873, the last quarter of which may be considered as idle. Moreover, there has not been for years a period when consumers so closely confined themselves to absolute necessities as the years of 1872 and 1873. Ten dollars a ton less for pig iron for the year would have kept every furnace blowing for all 1873, panic or no panic. With the resumption of business our consumers start, bare of stock; everything needs repairs, renewals and reconstruction. Granting the total productive capacity at four million tons, it is well known that over sixty per cent. of that capacity is never produced, and rarely over fifty. The charcoal product cannot ever be counted over fifty per cent. of its capacity. The outlying furnaces are worked sporadically to a great extent, and, in many instances, a great deal more iron is reported than is actually produced. The estimate of scrap made and reworked yearly is very low, being, in the opinion of many, fully thirty per cent. of our production. When we are able to state reliably exactly how much iron each branch requires for consumption, we will be able to show what the prospects of each year will be. As we now stand, it is a safe assertion that the production of four million tons will not kill the demand for iron in 1874, nor, if prices are kept within bounds, say not more than $40 for No. 1 foundry at the seaboard, will that demand be supplied. While on this subject, we note the statement that the Lackawanna Iron and Coal Co.'s mill, at Scranton, Pa., has made more tons of finished rails in 1873 than any other mill in the United States, having turned out 40,339 tons, and but for the panic would have rolled 9000 tons more, or 49,339. This is against 40,484 tons in 1872. It would seem that this must be an error, as the Cambria Company has a capacity of 90,000 tons, or very near it, of both iron and steel rails, and must have made fifty thousand tons of iron rails.

There have been numerous important changes with the new year. The American Steamship Co. have transferred the agency of that line to Messrs. Peter Wright & Son, also agents of the Red Star Line, and these two lines will hereafter be run in conjunction. The last ship of the American line, the Illinois, is finished and will take her place on the 12th inst. The Memorial Building of the Centennial Exposition is to be built upon a plan different from those hitherto described, and an illustration of the elevation is now exhibited. The general outline will be that of a cross, with arms of 420 and 320 feet long. A dome rises from the intersection, flanked by four towers, which, altogether, make an imposing edifice. The appointment of Baron Schwarz-Senborn, the late supervisor of the Vienna Exposition, as Minister from Austria to the United States, is regarded with great favor by friends of the Centennial, as he is warmly interested in our exposition, and will be of great aid. The new constitution, in effect Jan. 1, 1874, prohibits free passes by railroads. The Pennsylvania Railroad Company issued its legislative passes in 1873. The city roads have shut down on all except the board of presidents, and the press is stirring them up because each president can only legally ride free on his own road. The coal combination of the Wilkesbarre Co. and the New Jersey Central threatens a strong opposition to the Reading Co., but they who "capture" Franklin B. Gowen in the coal interest have not yet combined. Meanwhile the Reading Co. is quietly negotiating to get control of the lease of the Philadelphia and Erie Railroad, and it is said, will succeed, hence an outlet to the lakes for anthracite coal and Eastern freight. A rumor prevails that a change in the presidency of the Pennsylvania Railroad is on the slate, with Asa Packer as the coming man. When that occurs there will be more ballooning in Pennsylvania stock than the panic produced, to no one's benefit. The Thompson-Scott dynasty is the ablest railroad management to-day in the world, and is so recognized abroad. Asa Packer is a tower of strength in the Lehigh, but hardly of sufficiently magnificent proportions to run the "Anaconda." There are many items of interest unmentioned in this, and reserved for future letters. The following, relative to the growth of coal consumption, is of prime interest, and the same rule applied to iron would give us some desirable facts.

The following table exhibits the population of the United States at the dates stated, the coal produced from the commencement of mining to each date, and a comparison between the production at the given periods and the then population:

Years.	Pop. of the United States.	Coal Product.	Tons per Inhabitant.
1830.....	9,683,181	361	1 ton to 26,528
1830.....	12,866,020	359,191	1 ton to 35·8
1840.....	17,069,453	4,819,751	1 ton to 3·8
1850.....	23,191,876	19,573,009	1 ton to 1·6
1860.....	31,641,977	59,164,898	1 ton to ·8
1870.....	38,558,371	114,319,211	1 ton to ·6

Blast Furnace Operations in 1873.

The following is a recapitulation of the blast furnaces of the United States in 1873, compiled by Mr. James M. Swank, Secretary of the American Iron and Steel Association. Corrected to January 1, 1874:

STATES.			Whole No. of completed stacks.	Completed in 1872.	Completed in 1873.	Building or Projected in 1873.
Maine	Charcoal		1	...	...	...
Vermont	Charcoal		2	...	...	...
Massachusetts	Charcoal		5	...	...	...
	Anthracite		1	...	...	...
Connecticut	Charcoal		10	1	...	...
New York	Charcoal		14	...	1	...
	Anthracite		34	1	...	12
New Jersey	Anthracite		13	2	1	4
Pennsylvania	Anthracite	Lehigh	47	3	2	5
		Schuylkill	40	3	3	9
		Upper Susquehanna	26	3	...	4
		Lower Susquehanna	37	1	1	6
	Bituminous Coal and Coke	Shenango	31	5	2	3
		Miscellaneous	42	3	2	4
	Charcoal		39	...	1	...
Maryland	Charcoal		11	...	...	1
	Anthracite		4	...	...	...
	Bituminous Coal and Coke		4	...	...	2
Virginia	Charcoal		31	2	...	7
	Anthracite		1	...	...	...
	Bituminous Coal and Coke		...	...	...	1
	Charcoal and Bituminous Coal		2	...	1	1
West Virginia	Charcoal		1	1	...	1
	Bituminous Coal and Coke		2	1	...	3
Kentucky	Charcoal		20	1	...	4
	Bituminous Coal and Coke		3	...	...	1
Tennessee	Charcoal		19	...	...	2
	Bituminous Coal and Coke		3	...	2	4
North Carolina	Charcoal		9	...	1	3
	Bituminous Coal and Coke		1	...	...	1
South Carolina	Charcoal		2	...	...	...
Georgia	Charcoal		5	...	1	2
	Bituminous Coal and Coke		1	...	1	...
Alabama	Charcoal		10	...	3	6
Texas	Charcoal		1	...	...	...
Ohio	Bituminous Coal and Coke	Banging Rock	6	1	...	8
		Mahoning	28	2	1	...
		Miscellaneous	15	3	2	9
	Charcoal		37	...	...	...
Indiana	Bituminous Coal		8	2	...	...
Illinois	Bituminous Coal and Coke		7	...	1	2
Missouri	Charcoal		8	...	1	7
	Bituminous Coal and Coke		9	1	2	2
Michigan	Charcoal		28	2	2	6
	Bituminous Coal and Coke		4	...	...	...
	Anthracite Coal and Coke		1	1	...	...
	Peat and Charcoal		1	1	...	...
Wisconsin	Charcoal		10	1	3	1
	Anthracite Coal and Coke		3	...	1	...
Minnesota	Charcoal		...	...	...	1
Oregon	Charcoal		1	...	...	1
Total			641	41	42	124

Trade Report.

Office of The Iron Age,
Wednesday Evening, Jan. 7, 1874.

The past week has been one of considerable activity in Wall street, especially in the Stock Exchange. The money market continues very easy for the season, call loans rating at 5 @ 7 per cent. to good borrowers. Prime mercantile paper is quotable at 7 @ 10 per cent. The payment of interest began on the second and has since continued. At this center it is estimated that it will amount to about $75,000,000, and that $90,000,000 to $100,000,000 will come out in different parts of the country. The last bank statement rendered was favorable. It shows that the banks hold $16,707,250 lawful money—against $12,601,250 the previous week—above 25 per cent. of the total liabilities. The principal gain in the reserve was in specie, as the result of the Treasury disbursements, but from this time forth the legal tenders may be expected to increase. The expansion in loans was about $3,000,000; the deposits increased $10,240,000, showing that the banks have received a considerable amount of national bank currency in addition to the gain in legal tenders.

The gold market has ruled steady, with comparatively slight fluctuations. On Friday the new plan of calculating sterling exchange, as directed by Act of Congress, went into operation. Instead of quoting rates at so much per cent. premium, the quotation is now so many dollars and cents to the British pound sterling. The system which has been superceded was founded on the old par of 4 shillings and 6 pence to the dollar. The old dollar was the Spanish pillar dollar, of which there are very few extant, and the value of which was fully 4 shillings and 6 pence sterling. But in course of time the American dollar was coined, and as it was not intrinsically so valuable as the old Spanish dollar, the value fell to about the par of 4 shillings sterling, which was equivalent to 109⅛, and this was the par fixed for the payment of custom house duties.

The following shows the daily range of the gold premium:

	Highest.	Lowest.
Thursday	—	—
Friday	110⅞	110⅜
Saturday	111⅛	110⅝
Monday	111⅞	111
Tuesday	111⅛	111
Wednesday	111⅜	111

The stock market continued active and buoyant up to Monday, when a sharp reaction set in, and prices declined from 1 to 2 per cent. The principal dealings were in Pacific Mail, Lake Shore, Western Union, Union Pacific, New York Central, Wabash, Northwestern and St. Paul. The highest and lowest of to-day's quotations of active shares are given below.

The bond market has been strong for governments. Railroad bonds are also strong and in good demand for investment. Mortgages on new roads are still regarded with suspicion, and will be for a long time to come. We give below the closing prices of governments.

During the week the financial houses of Messrs. Fisk & Hatch and Henry Clews & Co. resumed payments. We believe that neither firm has at any time lost the confidence of the public.

The movements in foreign trade for the week are given as follows:

IMPORTS.

	1871.	1872.	1873.
Tot. for week	$7,495,607	$6,286,904	$2,776,449
Prev. reported	372,586,483	418,730,591	377,907,109
Since Jan 1	$380,082,090	$425,017,495	$380,683,558

Included in the imports of general merchandise for the week are:

	Quant.	Value.
Brass goods	16	$1,652
Bronzes	12	1,838
Copper		2,815
Cutlery	68	21,006
Gas fixtures	1	250
Guns	24	3,847
Hardware	12	2,047
Iron hoop, tons	20	1,568
Iron pig, tons	1,229	41,386
R. R. bars	5,252	64,375
Iron cotton ties	5,769	13,685
Iron, other, tons	287	17,884
Lead, pigs	1,658	10,722
Metal goods	85	8,823
Nails	13	161
Needles	5	3,343
Old metal		173
Per. caps	2	414
Saddlery	18	2,949
Steel	748	9,143
Tin, boxes	13,716	117,400
Tin, 648 slabs	41,404	10,887
Wire	29	5,662

EXPORTS, EXCLUSIVE OF SPECIE

	1872.	1873.	1874.
For the week	$3,199,289	$3,513,306	$4,908,685

The following is a comparison of the bank averages for the past two weeks:

	Dec. 27.	Jan. 3.		Differences.
Loans	$258,094,500	$261,135,400	Inc.	$4,040,900
Specie	23,514,300	28,395,600	Inc.	4,881,300
Leg. Ten.	44,664,000	46,458,100	Inc.	1,794,100
Deposits	195,152,100	205,399,500	Inc.	10,247,400
Circ'lation.	27,156,100	27,186,300	Inc.	30,200

Government bonds close as follows:

	Bid.	Asked
U. S. 1881s, reg.	116	116¼
U. S. 1881, cou.	116⅝	117
U. S. 5-20 1862, reg.	112⅝	113⅛
U. S. 5-20 1862, cou.	113⅛	113⅜
U. S. 5-20 1864, cou.	114⅛	115
U. S. 5-20 1865, cou.	115⅝	115⅞
U. S. 5-20 1865, cou., Jan. and July	115⅛	115⅜
U. S. 5-20 1867, cou.	116⅛	116⅜
U. S. 5-20 1868, cou.	116	116⅜
U. S. 10-40 reg.	111⅛	112
U. S. 10-40 cou.	112⅝	113
U. S. Currency Pacifics	113⅜	114⅛
New 5s, 1881	112	112⅛

The following were the highest and lowest prices of stocks to-day:

	Highest.	Lowest.
N. Y. Cen. & Hudson Consolidated	100⅛	99⅝
Lake Shore	81⅛	80⅛
Rock Island	104⅛	104
Wabash	54	52⅛
Western Union Telegraph	76⅜	75⅞
Northwestern	61⅛	59⅞
Northwestern, Preferred	73⅜	72⅞
Milwaukee & St. Paul	48	45⅞
Milwaukee & St. Paul pref.	72	71
Panama	111	110⅛
Pacific Mail	44	42
Ohio & Mississippi	32⅝	32
Boston, Hartford & Erie	3⅞	3⅛
Union Pacific	31⅞	31⅛
C. C. & Ind. Central	29⅞	29
Atlantic and Pacific pref.	13⅛	13
Hannibal and St. Joseph	29⅜	29⅛
Hannibal and St. Joseph pref.	39⅛	39
Quicksilver	30⅛	30⅛
Consolidated Coal	50⅛	50

GENERAL HARDWARE.

It is pleasant to be able to note a decided improvement in business. The demand is already increasing, and hopes of a good season's trade are entertained. The stocks of goods in all parts of the country are found to be very light—in a number of instances brought to our notice not over half what they usually are at this season. The tone of the market is strong.

Oliver Ames & Sons have changed the discounts on their goods to the following: The regular discount is 12½ per cent., and jobbers will not be allowed to sell at a lower price. The manufacturers will allow an extra discount of 5 per cent. to such of their customers as buy $500 worth in six months.

At their meeting last week, the manufacturers of Tacks reduced American Iron Half-weight to discount 70 per cent.; Full-weight, discount 40 per cent. American Iron Shoe Nails, 4-8 inch and longer, are now 10 cents. per lb., and 3½-8 and shorter, 10½ cents. Copper Tacks, 8 oz., or ½ inch and upward, 50 cents per lb. All of the above prices are subject to 7½ per cent. discount for cash, which is usually allowed by jobbers.

The price of Putnam's No. 6 Horse Nails has been reduced one cent., making them now 27 cents per lb. The other sizes are unaltered.

The Lock manufacturers were in session in New Haven yesterday and, we believe, to-day. All the principal manufacturers were represented, and agreed upon a classification and uniform list prices for their goods. Russell & Erwin Manufacturing Company, William Wilcox & Co., and Mallory, Wheeler & Co., have agreed upon a new list for Padlocks, subject to the same discount as Door Locks. The only Lock list we could obtain in time for this issue is that of Mallory, Wheeler & Co., of which Sargent & Co., their agents, have furnished us with advanced sheets. The following statement of terms we take from Mallory, Wheeler & Co.'s circular. They apply to both Door Locks and Padlocks of all makers:

Discount on all goods on our list, fifty per cent. net cash. Two per cent. may be deducted from all bills if paid within thirty days from their date. Funds par in New York, Boston or Philadelphia. Goods delivered on board at New Haven. One per cent. allowed on all bills for freight to New York. Moderate charge for boxes.

The following is

MALLORY, WHEELER & CO.'S PRICE LIST OF DOOR LOCKS AND PADLOCKS.

Door Locks and Latches—without Knobs.

No.	Per doz.	No.	Per doz.	No.	Per doz.
0	$2·25	104	3·75	229	23·00
1	6·75	105	3·50	230	10·50
01	6·50	105½	5·00	231	14·00
2	36·00	106	18·00	233	16·00
3	5·75	108	14·00	235	17·00
03	5·50	109	5·25	237	19·00
4	63·00	110	9·00	239	10·25
5	7·25	111	7·50	0239	10·00
6	20·00	112	4·38	241	12·25
7	16·00	113	10·00	0241	12·00
8	52·00	114	25·50	243	11·50
9	55·00	115	13·50	245	13·50
10	67·00	116	16·00	247	12·25
11	8·00	117	18·00	0247	12·00
12	82·00	118	24·00	249	14·25
13	9·50	119, Min.	38·75	0249	14·00
14	125·00	119 White	42·00	251	13·50
15	12·50	120	30·00	253½	15·50
16	24·50	121 Min.	50·00	415	32·00
17	14·50	121 White	53·00	416	25·00
18	58·00	122	5·00	418	65·00
19	30·00	125	16·50	419	33·00
20	33·00	126	30·00	420	36·00
21	37·00	126½	11·25	421	68·00
22	58·00	127	9·50	422	58·00
24	52·00	127½	16·25	466	33·00
26	30·00	128	16·00	468	28·00
27	42·00	128½	9·50	470	33·00
28	18·00	129½	8·00	472	28·00
29	28·00	132	17·50	480	120·00
30	50·00	134	22·00	482	145·00
31	62·00	136	25·00	484	72·00
32	27·00	138	40·00	486	84·00
33	37·00	139	22·50	490	25·00
34	80·00	140	13·00	491	28·00
35	104·00	141	16·00	507	46·00
36	95·00	142	15·00	508	52·00
37	122·00	143	18·00	509	55·00
38	95·00	144	18·00	510	67·00
39	69·00	145	12·50	511	61·00
40	120·00	146	16·00	512	82·00
41	39·00	147	14·50	513	70·00
42	250·00	148	18·00	520	31·00
43	54·00	149	17·50	521	37·00
44	275·00	149½	15·50	522	58·00
46	75·00	150	19·00	523	46·00
47	75·00	151	17·50	524	52·00
48	87·00	152	21·00	525	58·00
49	178·00	154	4·50	526	64·00
50	56·00	155	5·75	527	70·00
51	163·00	156	5·75	541	47·00
52, Min.	25·00	157	4·50	543	62·00
52 White	28·00	158	5·50	553	69·00
53	55·00	159	6·25	554	84·00
53½	69·00	160	6·50	555	43·00
54, Min.	14·00	161	[illegible]	556	40·00
54 White	17·00	162	[illegible]	[illegible]	24·00
55	40·00	162½	3·75		27 00
56, Min.	33·00	163	6·00	578	[illegible]
56 White	36·00	164	8·50	579	
57	12·00	165	8·00	0579	[illegible]
58	18·00	166	32·00	580	22·50
59	10·00	167	10·00	581	10·75
60	25·50	168	27·00	582	15·50
61	11·25	169	16·00	583	8·50
62	30·00	170	32·00	0583	8·25
63	9·75	170½	5·00	584	12·00
64	26·00	171	7·50	585	15·00
65	40·00	172	27·00	586	21·00
66	66·00	173	9·50	587	14·00
67	16·00	174	23·50	588	13·50
68	185·00	175	12·00	589	18·50
69	22·50	176	26·50	590	16·00
70	40·00	177	18·00	591	27·00
71	21·00	178	21·50	592	20·00
72	80·00	178½	17·50	593	17·50
73	7·00	179	8·00	594	12·00
74	210·00	0179	7·75	595	10·00
75	8·75	180	23·50	600	15·75
76	42·00	180½	20·00	0600	15·50
76½	42·00	181	11·75	601	18·00
77	8·00	182	8·00	602	13·75
78	17·50	183	9·50	0602	13·50
79	10·25	0183	9·25	603	16·00
80	26·50	184	9·00	604	30·00
81	8·75	185	13·00	605	34·50
82	15·50	186	15·50	606	36·00
83	10·25	187	15·00	608	42·00
83½	12·75	188	13·50	610	33·00
84	13·50	188½	9·50	611	38·00
85	9·25	189	10·00	620	20·00
86	18·00	190	11·50	621	23·00
87	16·50	191	8·50	624	22·00
88	30·00	192	14·50	625	25·00
88½	36·00	193	4·75	628	17·00
89	9·00	194	5·50	629	20·00
90	36·00	195	6·00	630	19·00
91	24·00	196	6·75	631	22·00
92	30·00	198	9·50	659	72·00
Per set.		199	11·00	661	84·00
93, Brass,	21·00	200	11·00	662	28·00
Electro plated.		202	4·25	665	42·00
93	26·00	204	5·50	666	48·00
Hand Plated.		205	3·75	668	60·00
93	47·00	206	8·00	669	25·00
Brass.		207	5·00	670	20·00
93½	14·00	208	9·50	700	33·00
Electro plated.		209	5·75	701	27·00
93½	17·50	210	5·75	702	21·00
Hand plated.		211	7·00	703	19·00
93½	32·00	0211	6·75	779	5·75
Per dozen.		212	7·25	783	7·25
94	24·00	213	8·25	879	6·75
Per set.		214	9·25	883	8·25
95, Brass	22·50	215	8·50	938	120·00
Electro plated.		0215	8·25	940	145·00
95	27·50	215½	10·25	947	84·00
Hand plated.		217	9·75	950	72·00
95	50·00	217½	13·25	1000	13·25
Per dozen.		219	12·50	1006	16·50
96	12·50	221	15·50	1012	14·25
97	9·50	223	10·75	1018	18·00
98	9·00	0223	10·50	1024	10·50
99	4·00	225	12·[illegible]	1026	11·75
100	15·00	227	18·50	1028	14·75
101	5·50	228	9·25	1030	15·50
102	8·00	0228	9·00	1032	17·50
103	8·50				

Mortise Bolts.

No.	Per doz.	No.	Per doz.	No.	Per doz.
107	$12·00	713	$15·00	716	$11·00
710	9·25	714	5·00	717	20·00
711	11·00	715	9·00	718	33·00
712	13·25				

Door Knobs.

Mineral. Jap'd Mountings. No.	Per doz.	Pearl White. Pl'td Mountings. No.	Per doz.	Silvered Glass. No.	Per doz.
216	$2·75	440	$9·00	460	$24·00
218	2·75	442	9·00	461	24·00
220	4·00	240	11·00	560	24·50
220½	4·50	240½	15·00	561	24·50
220 x 220½	4·50	240 x 240½	15·00	Electro Plated.	
222	4·00	242	11·00	264	57·00
222½	4·50	242½	15·00	265	63·00
222 x 222½	4·50	242 x 242½	15·00	265½	72·00
Pearl White. Jap'd Mountings.		Plated and Porcelain Mountings.		264 x 265	60·00
236	3·75	444	9·00	265 x 265½	67·50
238½	6·50	446	9·00	471	50·00
236 x 236½	6·50	248	11·00	473	56·00
238	3·75	248½	15·00	Hand Plated.	
238½	6·50	248 x 248½	15·00	266	65·00
238 x 238½	6·50	250	11·00	267	72·00
		250½	15·00	267½	115·00
		250 x 250½	15·00	266 x 267	68·50
				267 x 267½	93·50

Brass Door Knobs.

No.	Per doz.	No.	Per doz.	No.	Per doz.
268	$27·00	270	$33·00	271	$42·00
268 x 270	30·00	270 x 271	37·50	464	25·00
				465	28·00

Closet Door Knobs.

No.	Per doz.	No.	Per doz.	No.	Per doz.
252	$2·75	255	$3·75	258	$9·00
253	2·75	256	9·00	259	9·00
254	3·75	257	9·00		

Front Door and Store Door Club, Crank and T Handles.

No.	Per doz.	No.	Per doz.	No.	Per doz.
260	$9·50	426	$25·00	434	$85·00
261	32·00	427	30·00	435	90·00
262	30·00	428	25·00	436	25·00
263	53·00	429	30·00	437	27·50
269	100·00	430	25·00	438	48 00
272	53·00	431	27·50	439	53·00
273	100·00	432	48·00	441	90·00
274	32·50	433	53·00	443	85·00
275	50·00				

French Window Crank and T Handle Knobs.		Turnbuckle K'bs		Canada Bolt Knobs.	
129	$25·00	123	$3·75	280	$1·50
130	18·00	123½	4·50	281	2·00
130½	9·00	124	9·00	282	4·00
135	7·50				
Mortise Bolt Knobs.		Thumb Knobs and Plates.		Match Safes.	
285	$2·00	290	$3·25	0	$3·00
286	2·50	291	4·25	1	3·50
287	6·00	293	6·00	2	4·25
288	6·00	294	22·50		

Shutter Knobs.

Mineral. Size.	Per gross.	Pearl White. Size.	Per gross.	Silvered Glass. Size.	Per doz.
1 in.	$7·50	⅝ in.	$4·75	1⅛ in.	$7·00
1¼ in.	8·00	¾ in.	4·75	Electro Plated.	
1½ in.	8·50	1 in.	5·25	1⅛ in.	$5·25
1¾ in.	9·50	1¼ in.	6·75	Hand Plated.	
2 in.	10·00	1½ in.	7·50	1⅛ in.	$11·50
2¼ in.	11·00	1¾ in.	8·50		
Brass.		2 in.	9·25		
1⅛ in.	$4·00	2¼ in.	10·50		

Drawer Knobs.

Mineral. Size.	Per gross.	Pearl White. Size.	Per gross.
1¼ in.	$9·00	1 in.	$6·75
1½ in.	9·50	1¼ in.	7·75
1¾ in.	10·50	1½ in.	8·50
2 in.	11·00	1¾ in.	9·50
2¼ in.	12·00	2 in.	10·25
		2¼ in.	11·50

Bell Carriages and Cranks.

No.	Per doz.	No.	Per doz.	No.	Per doz.
800	$16·00	806	$5·50	810	$1·25
803	9·00	809	1·25	811	3·50

Check Springs.

No.	Per gross.
212	$7·00

Wrought Iron Tumbler Padlocks.
Warranted in all respects.

No.	Size. in.	1 Key. ℔ doz.	2 Keys ℔ doz.	No.	Size. in.	1 Key. ℔ doz.	2 Keys ℔ doz.
0000		$1·15	$1·31	10	3	$4·50	$5·20
000	2¼	1·70	2·00	11	3¼	6·00	6·70
00	2¼	1·80	2·10	12	2½	10·00	11·12
0	2¼	1·95	2·25	13	2⅝	12·00	13·12
1	2½	2·10	2·40	14	2½	6·00	6·70
2	2½	2·30	2·60	15	4	12·00	13·55
3	2½	2·60	3·05	16	2¼	3·75	4·05
4	2⅝	3·20	3·70	17	2½	5·25	5·95
5	2½	3·50	4·20	18	2⅝	11·00	12·55
6	2½	4·50	5·20	19	2¼	9·00	10·55
7	2¾	4·75	5·45	20	3	14·00	15·87
[illegible]		6·50	7·62	80	3	10·00	11·12
[illegible]		4·00	4·70				

Iron Tumbler Padlocks.
With Thin Bit Keys, New Variety.—Warranted in all respects.

No.	Size. In.	1 Key. ℔ doz.	2 Keys. ℔ doz.	No.	Size. In.	1 Key. ℔ doz.	2 Keys. ℔ doz.
1000	2¼	$2·50	$3·20	1007	3¼	$8·00	$9·75
1001	2½	5·00	5·70	1008	3	5·50	6·62
1002	2½	5·50	7·05	1009	3¼	9·00	10·75
1003	2⅝	5·75	7·50	1010	2⅝	5·00	6·12
1004	2½	5·00	6·75	1011		6·25	8·00
1005	2⅝	6·25	8·00	1012		6·00	7·12
1006	2½	4·75	6·30	1013		6·50	7·62

Brass Tumbler Padlocks.
Warranted in all respects.—All Brass Inside Work.

No.	Size. In.	1 Key. ℔ doz.	2 Keys. ℔ doz.	No.	Size. In.	1 Key. ℔ doz.	2 Keys. ℔ doz.
30	2⅛	$8·00	$9·75	130	2⅛	$24·00	$25·12
60	2½	13·50	15·25	160	2⅜	12·50	13·00
90	2½	12·50	14·25	190	2½	11·50	12·00
100	2⅛	6·00	7·75				

Small Padlocks.
Superior Quality—American Pattern.

Brass. No.	Size. In.	Per doz.	Nickel Plated. No.	Size. In.	Per doz.
40	⅝	$3·00	51	⅝	$6·00
41	¾	3·00	52	¾	6·00
42	1	3·00	53	1	6·00
43	1⅛	3·50	54	1⅛	6·50
German Silver.					
50	⅝	$5·50			

Padlocks in Sets.
With Master Key.

No.	Size. In.	In Sets of 4. Per Set.	In Sets of 6. Per Set.	In Sets of 12. Per set.
5	2⅛	$1·67	$2·25	$4·00
6	2½	2·00	2·75	5·00
7	2¾	2·08	2·87	5·25
8	3	2·67	3·75	7·00
9	2½	1·83	2·50	4·50
10	3	2·00	2·75	..
11	3¼	2·50	3·50	6·50
18	2½	4·67	6·50	12·00
19	2¾	4·00	5·50	10·00
20	3	5·67	8·00	15·00
80	3	3·83	5·50	10·50
1000	2¼	1·33	..	..
1002	2½	2·83	3·75	6·50
1003	2½	2·92	3·87	..
1004	2½	2·67	3·50	6·00
1005	2½	3·08	4·12	7·25
1007	3¼	3·67	5·00	..
1008	3	2·33	3·25	..
1009	3¼	4·00	5·50	..
1010	2½	2·17	3·00	..
1011		3·08	4·12	..
1012		2·50	3·50	..
1013		2·67	3·75	.

Padlock Keys.
Malleable Iron.

	Per gross.
No. 0000	$1·90
Nos. 000, 00, 0, 1, 2, 16	3·50
No. 3	5·50
Nos. 4, 40, 41, 42, 43, 50, 51, 52, 53, 54, 160, 190	6·00
Nos. 5, 6, 7, 9, 10, 11, 14, 17, 1000, 1001	8·50
Nos. 8, 12, 13, 80, 130, 1008, 1010, 1012, 1013	13·50
Nos. 15, 18, 19, 1002, 1006	18·50
No. 20	22·50
No. 000 to 4, assorted in half gross boxes	4·12
No. 000 to 6, assorted in half gross boxes	4·80
No. 000 to 8, assorted in half gross boxes	5·60
No. 000 to 80, assorted in half gross boxes	6·65
Brass.	
Nos. 30, 60, 90, 100, 1003, 1004, 1005, 1007, 1009, 1011	21·00

Padlock Master or Pass Keys.

	Per doz.
For Padlocks Nos. 5, 6, 7, 8, 9, 10, 11, 80, 1000, 1008, 1010, 1002, 1012, 1013	$6·00
For Padlocks Nos. 18, 19, 20, 1003, 1004, 1006, 1007, 1009, 1011	12·00

In addition to several new and desirable patterns of Padlocks, Mallory, Wheeler & Co. have just got out something entirely new in the way of Ornamented or Figured English Bronzed or Brown Enameled Door Knobs and Locks, both Rim and Mortise, which are illustrated in their new book, and will be embraced in Sargent & Co.'s new list with the other goods of M., W. & Co.'s manufacture. The prices will be much lower, of course, than their Genuine Bronze Metal goods.

Last Wednesday night the principal factory of Hotchkiss Sons, at Bridgeport, Conn., was consumed by fire. This building was new, and had been fitted up with machinery ready to go to work with the new year. All the smaller buildings were saved, and work will quickly be resumed, so as to supply all goods in time for the spring trade. The large collection of dies were saved, of which the loss would have been almost irreparable. Hotchkiss Sons have issued the following circular to their customers:

Bridgeport, Jan. 1, 1874.

Gents: On the evening of the 31st ult. most of our stock of goods was destroyed by fire. We shall commence manufacturing a new stock at once, and will be ready to supply the spring trade.

Thanking you for past favors, and hoping for a continuance of the same, we are, very truly, yours,

Hotchkiss' Sons.

The firm of C. W. Maguire & Co., manufacturers of Brushes, has been organized into a joint stock company, with a capital of $50,000. The officers are: S. A. Haines, president; C. W. Maguire, secretary; John H. Graham, treasurer. The new company have considerably increased capital and facilities, and intend to do a much larger business.

Stanley Works quote as follows: Strap and T Hinges, Narrow Butts, Table, Back Flaps, Pew Door and Chest Hinges, discount 30 and 7½ per cent.; Broad Butts, discount 35 and 7½ per cent.; Reversible Butts, 12½ and 7½ per cent. discount from Stanley Works list. We under stand that Roy & Co. have the same prices.

Charles Parker, Meriden, Conn., will issue his new illustrated Catalogue on the 1st proximo. In circular dated 1st inst. he gives notice that Coffee Mills Nos. 25, 35, 45 and 40, are reduced one dollar per dozen on the list. Parker's Patent Vises are reduced to discount 20 per cent., formerly 15, and Vises without Parker's improvements are reduced to discount 25 per cent. Parker's Blind Hinges, Nos. 90 and 95, are reduced to discount 50 and 10 per cent. Parker's Wood Screws are also made to conform to ruling prices.

The importers of German Coil and Halter Chain have adopted the following revised list, which took effect on the 1st instant. This list is subject to a discount of 10 per cent:

BRIGHT COIL CHAIN. (GOLD.)

	$13·00	10·00	8·50	5·75	5·00	4·40	℔ 100 ft.
No.	6-0	5-0	4-0	3-0	2-0	0	
	$3·90	3·70	3·55	3·40	3·35	3·30	"
No.	1	2	3	4	5	6	

BRIGHT HALTER CHAIN, 4½ FEET.

	$3·80	3·35	2·90	2·50	2·35	2·25	℔ dozen.
No.	3-0	2-0	0	1	2	3	
	$2·15	2·10	2·05	2·05	2·05		"
No.	4	5	6	7	8		

BRIGHT HALTER CHAIN, 6 FEET.

	$5·25	4·75	4·25	3·75	3·50	℔ dozen.
No.	3-0	2-0	0	1	2	
	$3·25	3·15	3·10	3·00		"
No.	3	4	5	6		

Hermann Boker & Co. have issued the following circular under date of the 2d instant:

We beg to inform you that we shall receive on or about January 20th a full stock of Nettlefold & Chamberlain's Wood Screws, which we offer to the trade at prices below those of American manufacture.

As it is impossible to keep a complete assortment of foreign Screws on hand, we will supply American Screw Company Screws of such sizes which we may not have on hand of foreign Screws.

In sending orders you will please let us know if we shall complete the same with American Screws at the ruling market prices. This will enable us to execute all orders promptly.

The discount off Nettlefold & Chamberlain's Wood Screws is 52½ and 10 per cent. from the revised list as published in these columns last week, and when American Screw Co.'s goods are substituted, they will be invoiced at prices ruling at time of shipment.

Alfred Field & Co. quote Birmingham Screw Co.'s Flat Head Iron Wood Screws at discount 52½ and 15 per cent. from the list mentioned above.

George W. Bruce, No. 1 Platt street, has issued, under date of 1st instant, the following discount sheet for Nettlefold & Chamberlain's goods:

The following revised discounts from Nettlefold & Chamberlain's goods, in connection with the reduced price list of Iron Screws, are presented by the subscriber, with the assurance that his stock and assortment will continue to afford the same advantages as heretofore. Machine Screws he is prepared to supply with greater dispatch and of improved quality. He also asks attention to his Iron Screws *plated with brass* as a substitute for brass or capped, combining *superior strength* with *cheapness.*

CASH DISCOUNTS FROM THE AMERICAN LISTS.

	Dis. per cent.
Iron Screws, Flat Head	52½&10
" " " Blued	52½&5
" " " Galvanized	33⅓
" " " Tinned	30
" " " Brass Plated	25
Iron Screws, Round " Bright	50&5
" " " Blued	50
" " " Brass Plated	20
Brass Screws, Flat Head	52½&10
" Round "	50
Machine Screws, Flat Head	60&12½
" " Round "	60
Stove Bolts, " "	15
Screw Eyes, Hooks, and Gate and Cornice Hooks & Eyes. — Iron	70
" " Brass Plated	25
" Brass	70
Rivets, Tinned and Black, 8 oz. to 3 lbs	40
" " " 4 lb. to 14 "	33⅓

(These Rivets are somewhat thicker and shorter than the American of same weight).

Prices subject to the changes of the market without notice.

Terms—Cash within 30 days, in funds at par in New York.

The above rates are based upon the assortments usually required, but *special rates will be fixed for extraordinary assortments.*

All other articles of Nettlefold & Chamberlain's manufacture furnished on the most favorable terms.

F. Wiebusch has succeeded B. J. Eyre & Co. in the manufacture of Razors and the use of the corporate mark, "Challenge," as will be seen by the following circular, issued under date of 31st ultimo:

We beg to advise you that we have retired from the Cutlery business, both in the United States and in Sheffield, England, and have sold all our stock and good-will of the business, together with the exclusive right to our corporate mark "Challenge," to Mr. F. Wiebusch, No. 84 Chambers street, New York. Very respectfully, B. J. Eyre & Co.

Referring to the above, I beg to inform you that I shall continue the manufacture of the celebrated "Challenge" Razors, and am now prepared to execute orders from stock, as well as for direct importation, on the most favorable terms. Yours, truly, F. Wiebusch.

We give our readers, below, the discounts published by the Stanley Rule and Level Co., to accompany their new illustrated price list, just issued. As referred to in our columns last week, greater uniformity in discounts has been secured in this sheet, thereby simplifying the purchase and sale of the different lines of goods. The changes in net prices are nearly all in favor of buyers, as will be seen by comparing the new prices and discounts. Several styles of their leading Plumbs and Levels are now added to the S. R. and L. Co.'s list, and made non-adjustable, at reduced list prices. The regular line of Patent Adjustable Plumbs and Levels remains full. Other additions and changes have been made, which can only be found by examination of the new list:

	Dis. per cent.
Auger Handles	10
Awl Hafts	20
Awls, Patent Pegging	20
Brad Awl Handles	20
Brad Awls, Handled	20
Bevels, Sliding T	20
" Patent Flush, Bailey's	45
" Patent Flush, Eureka	20
Cabinetmakers' Clamps	20
Chalk-line Reels and Awls	20
Carpenters' Tool Handles	20
Cattle Ties	20
Chisel Handles	20
Cross Cut Saw Handles	10
Countersinks, Wheeler's Patent	10
Dado, Filletster, Plow, etc., Combined	25
Door Stops, No. 6	20
" No. 8	30
Door Fenders, Floor	40
File Handles	40
Gauges	10
Hand Screws	40
Level Glasses	25
Mallets, Hickory and Lignumvitæ	60
Mitre Squares, Improved	10
Mitre Try Squares, Improved	20
Planes, Bailey's Patent	20
Plane Irons, "	20
Plane Handles	20
Pinking Irons	20
Plumbs and Levels	60
" " Patent Adjustable	60
" " Nicholson's Patent	60
" " Iron Frame	20
Pocket Levels	20
Plow, Filletster, etc., Combined	50
Plow and Matching Plane, Combined	20
Plumb Bobs, Adjustable	20
Rules, Boxwood—Stanley's	20
" Ivory, "	60
Miscellaneous Articles—Stanley's	50
Rules, Boxwood—Stearns'	50
" Ivory, "	50
Miscellaneous Articles—Stearns'	40
Sash Frame Pulleys	40
Sash Cord Irons	20
Scratch Awls, Handled	10
Saw Handles	20
Screw Drivers, No. 1	20
" No. 2 (same list)	30
Steak Hammers	40
Spoke Shaves, Bailey's Patent	20
Spoke Shave Cutters, Bailey's Patent	10
Tackle Blocks	10
Tack Hammers	25
Trammel Points	20
Tool Handles and Tools, Excelsior	20
Try Squares, No. 2	20
" Improved, No. 1	45
" Improved, No. 2	20
" Plumb and Level	25
Try Square and Bevel, Combination	20
Upholsterers' Hammers	20
Veneer Scrapers, Bailey's Patent	20

Discount for cash (if paid within 30 days), 10 per cent.

Terms Cash.—Payable in current New York or Boston funds. Invoices remaining unpaid after 30 days from their date are subject to draft, payable at sight.

The Trenton Vise and Tool Works, Hermann Boker & Co. proprietors, have added a new building to their already extensive establishment. They have also increased the line of goods manufactured at these works, and have in preparation a revised list which will comprise the new goods in addition to the regular line so well and favorably known to the trade. With greatly increased facilities, all orders entrusted to their care will be promptly executed.

D. H. Whittemore, Worcester, Mass., informs us that no change is contemplated in the price of his goods, and quotes them as follows: Bay State Apple Paring and Coring Machines, $15 per dozen; Skeleton Apple Paring, Coring and Slicing Machines, $8·50; Improved Union Apple Parer, $8·50; Peach Parer, $12; and Peach Stoner and Halver, $7 per dozen, subject to the following discounts: On all orders received prior to February 1st, for immediate delivery, a cash discount of 15 per cent. will be allowed. On orders of 50 dozen and upward, same terms of sale, a discount of 25 per cent. will be allowed, and the trade are notified that this special inducement is only intended for the time being, and will not have reference to prices when the season for these goods shall have opened.

There is little if any improvement to note in the demand for Nails. The regular asking price is $4·25, net, for 10d, and we have heard of this figure being considerably shaded for a good order. Nails are quoted today in Philadelphia, in lots of 1000 kegs, at $4, net, for 10d; small lots, at $4·25, net. We quote Nails at $4 @ $4·25, net, according to quantity.

IRON.

American Pig.—There is little or no change in the aspect of affairs. Makers and buyers seem equally indifferent. Holders and makers have great faith in the future, and confidently anticipate that prices will open about $38. Some of the more sanguine talk of $40. Consumers,

on the other hand, hold up dull trade, scarcity of money amongst their customers, and slight embarrassments in the management of their business. For the present there is little doing. The companies refuse to make contracts, except for the immediate future, and for such there is but small demand. The Thomas Iron Co. quote us, for prompt delivery, as follows: No. 1 extra, $36; No. 2 extra, $33; Gray Forge, $31. We learn that a number of furnaces on the Lehigh are being blown in, and the prospect of Iron opening at a decidedly profitable price makes it probable that others will follow. No. 1 extra Foundry Iron can still be bought at $35, and it is not believed that any considerable quantity has been sold at a higher price. We quote: No. 1 extra, $35 @ $36; No. 2 extra, $32 @ $33; Gray Forge, at works, $27 to $29; White and Mottled, at works, $24.

Scotch Pig.—The market is very firm, late arrivals, amounting to 1200 tons, having all been stored, the dullness of business causing few inquiries, and importers not seeming disposed to force their stock on the market. We quote: Gartsherrie, $47 @ $48; Coltness, $45; Glengarnock, $42; Eglinton, $41.

Following are the prices of Scotch Pig Iron in Glasgow, as reported by Messrs. J. E. Swan & Bros., under date of Dec. 19:

	No. 1	No. 3	No. 4
Gartsherrie	113/6	107/	....
Coltness	118/	108/	....
Summerlee	112/6	106/6	110/
Langloan	112/6	106/6	....
Govan	107/6	106/	110/
Calder	*115/	107/6	....
Shotts, Bessemer	155/	150/	....
do Ordinary	112/6	107/6	....
Carnbroe	110/	106/6	110/
Wishaw	107/6	106/	105/
Monkland	107/6	106/	....
Chapelhall	112/6	....	....
Clyde	108/	106/6	107/6
Quarter—Clyde	108/	106/6	107/6

Glasgow Warrants 3-5, No. 1; 2-5, No. 3, g. m. b. 106/6.

*f. o. b. Glasgow, 1/ per ton, extra.

WEST COAST BRANDS—*f. o. b. Ardrossan.*

	No. 1	No. 3	No. 4
Glengarnock, Ardeer	110/	106/6	....
Eglinton, Lugar, Muirkirk, Portland—Branded Eglinton	107/	106/	106/
Dalmellington	108/	106/	105/

CURRENT RATES OF FREIGHT ON PIG IRON.

To	From Glasgow.	From Ardrossan.
New York	7/6	7/6
Boston	17/	17/
New Orleans	20/	20/
Baltimore	17/	17/6
Philadelphia	16/	16/
Providence	20/	15/

Bar.—The mills are better supplied with orders, and are firmer in their views. We quote for Eastern mills 3c. @ 3⅛c. per lb. The latter figure is insisted on by several of the largest makers.

Rails.—There is more inquiry for Rails, but prices remain quotable from $55 @ $60 per ton, gold. The larger part of the Rails in this market are held at the higher price, but others can be had at $55, or possibly a shade less. We quote American, at works, $60 @ $65, currency.

Old Rails.—We quote Old Rails $40 @ $41.

Scrap.—Wrought Scrap from yard is held more firmly. We quote from $42 @ $45, and hear of offerings all the way between these figures.

METALS.

Copper.—The market for Lake is very quiet, but prices are well maintained. Sales for the week amount to 150,000, lbs. at 24⅛c. @ 24⅜c., cash. The closing quotations are 25c. per lb., cash, and for future delivery, 25⅛c. @ 26c. A sale is reported of 50,000 lbs., Quincy, for February delivery, at 26c. Cable despatches from London quote Chili Bars at £84, and Best Selected, £94, an advance during the last two weeks of £2 per ton. The general feeling among the trade is that the market is in a healthy condition, and that there is no likelihood of immediate change. The demand for Manufactured Copper is, as it invariably is at this time of the year, very limited, but there is no change to note in prices. The quotations are: Copper Bolts, 35c.; Sheathing (over 12 oz.), 33c.; Braziers (over 16 oz.), 35c. Yellow Metal is in fair request at 26c. per lb. for Sheathing, and 32c. per lb. for Bolts.

Tin.—The market for Pig Tin during last week has been very quiet, and prices are slightly lower. Cable quotations from London give £116 as the value of Straits, and the rates in this market were lowered somewhat in consequence. The reduction is, however, very slight, and not regarded as permanent. Sales for the week comprise 250 Slabs Straits at 28c. @ 28⅛c., 250 do. at 27⅞c. @ 28⅛c., and 300 Slabs Billiton at 27¾c., all gold. The closing quotations are as follows: Straits, 28c. @ 28⅛c.; Banca, 32c. @ 32½c.; English L. & F., 26c. @ 26½c. English Refined, 27c. @ 27½c.; Malacca, 28c. @ 28⅛c., and Billiton, 27¾c. @ 28c. The business in Tin Plates has been very quiet during the week, and prices remain the same as before. The sales reported are 4000 boxes Charcoal, low grades, at $9·75 @ $10·25; 500 boxes Coke at $8·50; 500 boxes Charcoal Terne at $9·75, and 600 boxes Charcoal I. C. on a basis of $10·50, all gold. The quotations to-day are, I. C. Charcoal, $10·25 @ $10·50; I. C. Coke, $8 @ $8·25; Coke Terne, $6·75 @ $8·25; Charcoal Terne, $9·25 @ $10, gold.

The following is the import of Tin into New York, from Jan. 1 to Dec. 31:

		1873.	1872.
Pigs	No.	79,280	92,312
Plates	bxs.	936,275	966,579

Lead.—The market for foreign is very dull, and there are no transactions to report. Prices are quoted at 6⅝c. @ 6⅞c. for ordinary, and 7⅜c. @ 7⅝c. for refined, gold. Domestic is quiet at 6c. @ 6⅛c., gold. Bar is reported steady at 9⅛c., and Sheet and Pipe have been reduced to 10c. per lb., with usual discount to the trade. Tin Lined Pipe is quoted at 16⅛c. per lb., less 10 per cent.

Speiter and Zinc.—There is very little doing in foreign Spelter and prices are partly nominal. Selected Silesian is quoted at 7⅝c., gold. A sale of 25 tons Western was effected last week at about 8c. per lb., currency. Sheet Zinc is in moderate demand at unchanged rates.

Antimony.—A sale of five casks of Regulus is reported at 18c. per lb., gold. There is but a small stock on hand, and holders quote 13⅛c., gold, as their lowest selling price.

COAL.

The demand for Coal continues very limited, owing in part to the long continued mild weather, and also to the general dullness of trade incident to this season of the year. There is no quotable change in prices of Anthracite to note, although we have reports of transactions where concessions of 15c. @ 30c. per ton have been made on the established rates. The sale of Scranton Coal, reported below, while resulting in a slight reduction of prices, does not appear to have affected the general market to any great extent, and the general opinion in the trade is that no change will take place until the companies which virtually control the market meet in March next and decide the tariff for the year ensuing. Several of the companies have agreed with the miners to continue to pay wages on the basis of last year, and there is not much prospects of any serious trouble arising in that quarter. Still, as other operators propose to make a reduction of 10 per cent. from last year's rates, and as the miners have resolved to meet in Philadelphia on the 8th instant to discuss the matter, it might be as well to suspend judgment. The present prices of Anthracite from the yard range from $5·50 @ $6·50 per ton.

The regular monthly auction sale of Scranton coal took place on Wednesday, Dec. 31st, at the salesrooms of the Delaware, Lackawanna & Western Railroad, No. 26 Exchange Place, John H. Draper being the auctioneer. The attendance was large and the bidding spirited, and the amount offered—70,000 tons—was rapidly disposed of.

There was an average decline on all the varieties, particularly on Chestnut and Stove. The following is the average decline per ton: Chestnut, 26¼ cents; Stove, 15 cents; Egg, 7½ cents; Grate, 6¼ cents; Steamboat, 7½ cents. The following are the prices as compared with those of last year:

	Tons.	Nov.	Dec.
Steamboat	8,000	$4 85 @$4 90	$4 80 @ —
Grate	14,000	4 97½@ 5 00	4 90 @ 4 95
Egg	10,000	5 30 @ —	5 15 @ 5 30
Stove	28,000	5 42½@ 5 50	5 25 @ 5 37½
Chestnut	10,000	4 52½@ 4 57½	4 20 @ 4 37½
	70,000		

The new combination in Coal, consisting of the Wilkesbarre, Honeybrook and Lehigh Coal Companies, in alliance with the Central Railroad of New Jersey, will form a large and powerful corporation, but it does not yet appear what effect it will have on the general course of the market. The same combination has virtually existed, although not in its present organized form, for years, and it is reasonable to suppose that their future action will be, to some extent, guided by and formed upon their previous policy.

The market for Bituminous Coal is unusually depressed, even for this season of the year, and prices have given way somewhat in consequence. The quotations of Cumberland Coal are now from $6·75 @ $7 per ton.

Foreign Coal is in moderate demand, and the prices quoted, are: Liverpool House Cannel, $20; do. Gas, $14; Newcastle Gas, $10; Scotch do., $10 @ $12; Scotch Steam, $7 @ $7·50.

The total shipments of Coal over the Cumberland and Pennsylvania Railroad for 1873 were 2,243,658 tons, against 1,890,605 tons in 1872, making an increase in 1873 of 353,053 tons.

PHILADELPHIA.

PHILADELPHIA, Jan. 6, 1874.

The Iron market has been very quiet since my last, with a disposition on all sides to wait a little longer in the year before either selling or purchasing.

The furnace companies are generally resumed, and have pretty thoroughly exhausted any stocks of Iron made in 1873. They evince no desire to contract for future deliveries, and, in the case of Lehigh companies, are very firm at $36 for No. 1 Foundry, for immediate deliveries, with absolutely no price for the future. Forge Irons are scarce beyond question, and are appreciating slowly, with more active inquiry than for any other grades.

The mills which have been suspended are generally resuming, the Pottstown Iron Company having commenced work this week. Bars are in better demand, and specifications to a considerable amount offering at prices below the views of makers. The Rail mills are receiving sufficient encouragement to resume, and transactions to a considerable amount at better prices are being closed. Old Rails are quiet, with no material transactions. Scrad is scarce, and wanted at an advance.

The following fairly represent the prices of Iron in this market to-day:

No. 1 Foundry, $34 to $36, latter for choice Lehigh; No. 2 Foundry, $32 to $34 asked for choice Lehigh; Gray Forge, $29 to $30, delivered here.

BARS—3c. to 3⅛c. per lb., as to quality.

OLD RAILS—$40·50 to $41·50.

SCRAP—$38 to $40, with no stocks and active inquiry.

The sales include some 1000 tons No. 1 Foundry at $35; 250 do. at $36; 1000 tons No. 2 and Gray Forge Schuylkill Irons, private terms; 600 tons Cinder White, said to be $25. A considerable sale of Rails is closing at prices equal to $65, at works, and in amount some 6000 tons.

The market is quiet, with indications of an improving and steady trade.

The following annual review of the market here for 1873, by Mr. Edward Samuel, gives a very clear and reliable retrospect of the year:

Office of EDWARD SAMUEL,
IRON BROKER AND COMMISSION MERCHANT,
332 WALNUT STREET,
PHILADELPHIA, Dec. 31, 1873.

As foreshadowed in the closing paragraph of our Review for 1872, the market early in this year opened at comparatively high figures, and with an active demand, both consumptive and speculative; but by spring a gradual and easy reaction commenced, which continued uninterrupted until the crisis in September, which latter considerably accelerated the downward movement, and not until the middle of November were there any signs of returning animation. Since then, especially in pig iron, a large business has been done and a consequent rise in prices has ensued. The early movement in the year was due in a great measure to combination and speculation. The easy decline from the spring until the panic was the result of natural causes; the appreciation of the currency, the overtaking of the consumption by the production, and, lastly, the general desire existing among consumers to become less extended. The last movement of the year is rather a peculiar one, and can only be warranted by the belief that any staple article is a good purchase at or below the cost of production, for, so far as we have ascertained, purchases that have been made by consumers, in nine cases out of ten, are not to cover orders, but anticipated ones. Below we append a table showing the values of No. 1 American Pig of good makes in this market for the respective months of 1869, '70, '71, '72, and '73:

	Jan.	Feb.	Mar.	April.	May.	June.
1869	$42·18	$40·25	$41·75	$40·00	$39·50	40·80
1870	35·17	34·50	33·95	32·50	32·30	32·50
1871	30·50	30·91	34·75	35·37	35·50	35·50
1872	37·50	40·00	43·50	48·50	49·00	50·25
1873	45·00	47·80	47·80	47·50	47·00	46·00
	July.	**Aug.**	**Sept.**	**Oct.**	**Nov.**	**Dec.**
1869	$42·00	$41·00	$40·30	$40·00	$38·70	$37·60
1870	32·50	33·50	32·69	31·83	31·25	30·50
1871	35·75	36·25	37·00	37·20	37·50	37·50
1872	51·50	52·00	53·00	52·00	50·00	45·00
1873	44·50	43·00	41·00	39·00	33·00	32·50

The market was sluggish from April until the panic, and stagnant during the panic, until well into November; in consequence of this, there was a large accumulation of stocks, especially of No. 2 X, which latter ruled some $4 to $5 per ton lower than No 1 X. The low prices prevailing for merchant iron in the summer curtailed the consumption of forge metal, but as there was but little made comparatively to foundry irons, prices ruled at about $1 under those for No. 2 X. In November, a concerted movement of buyers—mostly New York dealers, relieved the furnaces of about 17,000 tons of 1 Foundry for early delivery, at prices ranging from $29·50 to $30 at furnace; this created a more general movement, and many consumers, tempted by the low prices prevailing, made purchases at prices ranging from $25 for gray forge to $32 for No. 1 X foundry. In the lower grades of pig, especially in white and mottled cinder Irons, there were sales of some 8000 tons at an average price of $20 at furnace.

The production of all kinds of pig metal in this country for 1872, as now definitely ascertained, amounted to 2,830,070 net tons, of which 1,369,812 tons were anthracite, 922,425 tons bituminous coal and coke, and 500,363 tons charcoal, 37,246 anthracite coal and coke, and 224 tons peat and charcoal. The total production exceeding that of 1871 by 917,462 tons. The estimated production for 1873 is 2,695,434 tons, showing a decrease of some 110,000 tons, the result of the panic. Fully one-third of the furnaces of the country are out of blast, so that if the present activity continues, the accumulated stocks will be largely reduced, and prices being maintained will no doubt lead to a resumption of operations by many stacks now idle.

In old rails and scrap iron the importations for the year have been remarkably light, probably less than 60,000 tons, showing a falling off of nearly 110,000 tons as compared with 1872. In the early part of the year a speculative movement occurred in New York, which terminated, leaving all the rails in port and to arrive in the hands of two houses, who held them firmly at from $50 to $52. In the absence of any demand, and sympathizing with the rest of the market, forced, too, by the domestic lots constantly offering, prices receded until September, when $40 was asked, and some little business done at that figure. During the panic many small lots were taken up at from $30 to $35, and to-day prices are firm at $40 for Ts, but with little demand. There are reasons to believe that the large trade in old rails done for several years past has about come to an end. Beneath is the average price of old rails at this port for 1872 and 1873:

OLD RAILS.

	Jan.	Feb.	Mar.	April.	May.	June.
1872	$42·00	44·50	48·50	52·00	53·00	50·50
1873	49·00	49·50	52·00	50·25	46·50	46·00
	July.	**Aug.**	**Sept.**	**Oct.**	**Nov.**	**Dec.**
1872	$50·50	51·00	51·00	48·00	46·50	46·50
1873	44·25	44·25	44·00	40·00	37·00	40·00

Wrought scrap has sympathized with the rest of the market. The business done has been much smaller than for three years past, the importations from England and the Continent being curtailed by the high prices prevailing there. The highest figure reached during the year was $53 in May, and the lowest $28, during the hight of the panic. Prices have since recovered to $37 to $38, although, at present, many holders refuse to sell at considerably better than these figures. Beneath we give the price of wrought scrap for 1873:

No. 1 WROUGHT SCRAP.

1873	$47·00	49·00	50·00	52 00	53·00	48·00
1873	44·00	40·00	40·00	35·00	36·09	39·00

American rails have been dull the year through, and prices have not been remunerative. The difficulty in negotiating loans for new enterprises, and the attempt on the part of the buyers to procure rails on long time paper with unnegotiable securities as collateral, did not add tone to the market. The consequence of this was a considerable reduction in the new railroad mileage, and, consequently, a lessened production on the part of the mills. The total quantity of iron and steel rails produced in the United States in 1872 was 941,992 net tons, excluding tram and mining rails; in 1871, 775,733 tons, an increase of 21½ per cent. for the production of 1872 over that of 1871. Of the total production in 1872, 94,000 tons were Bessemer steel rails, an increase in this production of 56 per cent. in one year. The total consumption of rails in 1871 was 1,341,935 tons, and in 1872 1,472,842 tons. The prices for 1872 and 1873 are herewith given:

	Jan.	Feb.	Mar.	April.	May.	June.
1872	$71·00	75·00	79·00	84·00	91·00	90·00
1873	84·00	84·00	84·00	83·00	82·00	82·00
	July.	**Aug.**	**Sept.**	**Oct.**	**Nov.**	**Dec.**
1872	89·00	88·00	88·00	88·00	87·00	85 00
1873	78·00	76·00	75·00	70·00	61·00	61·00

In Merchant Bars, prices for the first four or five months of the year were remunerative and the mills generally full of orders. After this period a general falling off of demand created concessions, until, at the high rate of wages and the cost of forge metal, there was little or no profit to makers. Many mills were slack of orders. During the last half of the year the business has been unremunerative and orders difficult to obtain, even at the reduced prices. All this too, occurred when, by the high prices prevailing abroad, our importations were remarkably small, being only 21,958 tons for the first nine months of 1873, against 53,599 tons for the corresponding period of 1872, or a diminution of over 50 per cent. The consequence of this lessened domestic production and foreign importation has shown itself quite recently, by the demand from dealers to replenish their nearly exhausted stocks, and quite large purchases were made early in December, at prices ranging from $65 to $67 at the seaboard. The prices have stiffened somewhat, and the mills are now asking 3·2 cents with orders generally for two to three months ahead. Below is a comparative table of the mill prices for 1872 and 1873:

	Jan.	Feb.	Mar.	April.	May.	June.
1872	$87·50	88·75	97·42	102·12	103·04	103·04
1873	100·80	98·56	96·32	96·32	94·08	91·84
	July.	**Aug.**	**Sept.**	**Oct.**	**Nov.**	**Dec.**
1872	105·28	112·00	116·48	113·68	106·40	100·80
1873	84·50	82·88	80·64	76·16	70·56	67·20

The plate iron makers have had a fair year, the demand being quite good, and, although the prices ruled low for several months in the summer, the year's average has been a good one. This branch of industry was, of course, seriously affected by the panic, but, fortunately for it, the anticipated troubles with Cuba created a demand for plates for Navy purposes, and, in the last two or three weeks large orders have been placed at, however, low figures. Those plate mills making a specialty of skelp iron have had orders countermanded and are generally dull, the gas pipe business having been unremunerative the entire year. There has been somewhat of a revival, however, in this specialty quite recently, and we have heard of orders for some 1200 tons being placed at about 3 cents, a very low figure.

Our review is necessarily a brief one, and contains far less statistical matter than is desirable, but the difficulty of obtaining reliable statistics is such that we have thought it best only to use those which we are assured are accurate. Many of the trade look for higher prices both for raw and manufactured irons the coming year. We cannot ourselves see any cause for a material appreciation of raw irons, believing that the productive capacity of the country, coupled with the necessarily decreased demand for new railroad enterprises, will do much to prevent it. On the other side of the question, however, it may be said, that the railroads at present in operation have, for the last two years, been most economical in their purchases, awaiting lower prices to make extensive renewals which are now absolutely required. Again, the high prices prevailing abroad, which in consequence of high wages and dear coal are apt to continue, create a demand on our domestic production which heretofore has been supplied from other sources. The question of an increased currency also comes up, and no doubt will, in case inflation is authorized by Congress, materially enhance values. It is, therefore, quite difficult to predict, and we leave it for our next review to show what will occur.

Respectfully, EDWARD SAMUEL.

Messrs. BLAKISTON & COX, Iron Merchants, 333 Walnut street, under date of January 6, 1874, report as follows: Business has for the last few days been quiet. As is usual at this time of the year, much attention is given to book accounts, and the proper placing of debit and credit balances. It is generally conceded that after the 15th of the present month the trade of the country will have begun to move. In American Pig there is considerable inquiry, but the large sales of a few weeks ago have given place to orders for small amounts and for immediate consumption. There have been no contracts, that we know of, made for delivery beyond the present winter months. Consumers are offering to contract for deliveries as far ahead as July, but for these the makers refuse a price. Although the furnace companies have been little troubled in regard to the labor question during the year just past, and the men have accepted the reductions made in their pay, there is always a feeling of doubt as the spring approaches, when the demand for labor from agricultural and other sources produces uneasiness, and the laborer "strikes" for higher wages. It is due to this fact, in a great measure, that the furnace companies refuse to sell, except for immediate or early future delivery. The "open" winter thus far has greatly facilitated the shipping of Iron, and reduced the heavy stocks on furnace banks usual at this season. This branch of the trade is in good condition, and the "outlook" is full of promise. Manufactured Iron is daily attracting more attention, although prices are still too low to make a profitable business. The mills around us are all running, and are receiving a fair number of orders. The resumption of one of our largest manufacturing establishments that has been idle for some time, argues well that business is becoming better. American Rails are still comparatively dull, but are, in common with other interests, feeling the general revival. Below we give the various quotations: *American Pig*—No. 1, $36; No. 2, $34; Gray Forge, $31·50 to $32; White and Mottled, $29. *American Rails*—New, at the works, $65 to $70; Old do., $40 to $41. *Scrap*—No. 1 Wrought, $35; No. 1 Cast, $23 to $25, in yard.

Messrs. LLOYD, SUPPLEE & WALTON, under date of January 6, write us as follows: Since our last letter the houses have gone through their yearly inventory of stock, and are now making arrangements for the spring campaign. In regard to trade, of course, but little has been done during the last month; consequently, we have not much to report in that particular. Prices cannot be looked upon as regulated for the opening of 1874. Enough is known, however, to show that the anticipated declines which were eagerly looked for in November are not likely to take place. Indeed, the trade were startled in December by the first blow favoring advances. Many parties have looked upon this as injudicious, but it is well known that upon Locks the manufacturers reported losses at the former rates. The question now to be solved is, What is the jobber to do? All believe trade would have started more satisfactorily had declines upon goods manufactured from Pig Iron taken place; but with no immediate prospect of this, all must commence buying at rates now offered. Pig Iron has ruled lower than one year ago, but manufacturers report that their sales have been made without sufficient remuneration, and as we now look upon the market, which shows a gradual advance and many furnaces out of blast, we cannot now hope for any further changes than equalization of prices, which had become a little irregular. We hear of a slight advance upon Oliver Ames' Shovels and Spades. Strap and T Hinges have shown a stiffness. Screws are now offered at 52½ per cent. discount. Bench Planes are offered at 30 per cent. discount. Corner Chisels have advanced to discount 60 per cent., while Framing Chisels and Socket Firmer Chisels are offered at 60&10 per cent. discount, although no change with the manufacturers. In the course of another week we hope to be able to state more fully what changes we start with for the year 1874.

PITTSBURGH.

PITTSBURGH, Jan. 3, 1874.—Trade, as might be expected just in the midst of the holidays, has been quiet the past week, and as our merchants and manufacturers generally will be engaged in taking stock and making their annual settlements, it is not to be expected that there will be any very decided improvement for a week or more to come. However, the outlook is very cheerful—could not be much better. Money is easier. Stocks—I refer to Pittsburgh manufactures in particular—both in first and second hands, are unusually light. Collections are improving, and there is more stability in regard to values. It is thought almost everything has touched the lowest notch. Hence, it is confidently predicted that orders will flow in freely the next sixty, perhaps ninety, days. It is worthy of special mention that the supply of manufactured goods in general has not been so much reduced in Pittsburgh for many years, and it may be attributed to the fact that our manufacturers ever since, and even prior, to the panic have been working entirely on orders. Their great object was to close the year with as little stock as possible. The operations in Pig Iron, in consequence of the holidays, have been comparatively light during the past week, but the market continues very firm and prices are still tending upward. There is but little offering, except at very full prices. Producers generally are in easier position financially, and consequently are not compelled, in order to raise funds, to sacrifice their product, as was the case some weeks since. Standard Gray Forge Irons are pretty generally held at $32, 4 months, and we are assured that there are at present but very few, if any, sellers below that figure, although there have been no sales reported as yet above $30; furnacemen claim that even $32 scarcely covers the actual cost of making the article, hence some of them are indifferent about selling just now, as they are inclined to the belief that a further appreciation is not improbable. Foundry Irons are firmer, and there is more inquiry, with less offering, particularly of desirable grades, and prices are tending upward; No. 1 may be quoted at $34 to $35, 4 months; No. 2, $30 to $32; White and Mottled, $25 to $27. Charcoal Irons continue quiet, the high rates at which they are held, as compared with other Irons, restricting the consumption; Hot Blast quotable at $40 to $45, and Cold Blast at $60 to $66, according to quality. There is nothing doing in Blooms, and prices are nominal at $90 to $105. The demand for Scrap is steadily increasing, and the market is firmer, in sympathy with Pig. Dealers have had a rough time of it the past year; they are now feeling much better. The receipts recently have been comparatively light, but stocks are large, as, until within the last few weeks, there has been a steady accumulation; hence dealers will be able to supply the demand, although they will, no doubt, follow the advance in Pig. There is a steadily increasing demand for all kinds of finished Irons, and the market continues to grow stronger, in sympathy with the raw material. Orders are coming in freely from the East and West, and not only are they more numerous, but they are, as a rule, much larger; buyers who, since the panic, and even before it set in, ordered from five to ten tons at a time, are now asking for from one to five hundred and, even, a thousand tons, and manufacturers, as a rule, are refusing to book orders for forward delivery at present rates. Quotations may now be fairly given on a basis of three cents for Bars, for immediate, and ⅛c. to ¼c. more for future delivery. There is also considerable inquiry for Nails, mainly for future delivery, indicating that buyers are apprehensive of an advance, and the market is growing stronger in sympathy with Iron. There has been no quotable change in rates for small lots for immediate delivery, $3·90 to $4, usual time, but a round lot, we have reason to believe, could not be placed under $4·12½, perhaps $4·25. In a word, manufacturers are not seeking orders, preferring to hold back until the market becomes more settled, and rates more fully established. The demand for Steel, while it cannot be termed brisk, is increasing, and manufacturers are pretty confident of a good spring trade. No change in prices, although they are hardening. The Window Glass trade continues in an unsettled and unsatisfactory condition; orders are coming in, but manufacturers have not the material to fill them, and they are determined apparently not to start up their factories, most of which have been idle since July last, until the blowers, helpers and other workmen consent to go to work at reduced wages. They claim that it is impossible to compete with the East, and pay last year's rates for labor.

The Pittsburgh *Commercial* of Jan. 3d says: Holders of good brands Pig Iron are very firm in their conviction that better prices will prevail during the early part of this year, and are consequently holding their Iron out of the market while it remains at $30 for four months or less. Several makers are holding at $32 per ton, four months, while some are not willing to sell for future delivery at that price. We have heard of sales at $31 per ton for four months, but are without details, and cannot report particulars. We also hear of a sale of 1000 tons on private terms. We are reported the following sales:

BITUMINOUS COAL SMELTED FROM LAKE SUPERIOR ORE.

1,000 tons Gray Forge	$30·00—4 mos.
500 tons Gray Forge	28·00—cash.
300 tons Gray Forge	30·00—4 mos.
250 tons Gray Forge	30·00—4 mos.
200 tons Gray Forge	30·00—4 mos.
200 tons Gray Forge	28·80—cash.

ANTHRACITE.

200 tons Gray Forge	$27·50—cash.
150 tons Gray Forge	29·00—4 mos.

CHARCOAL HANGING ROCK.

55 tons No. 1 Foundry	$40·00 @ 43·00—4 mos.
40 tons No. 2 Foundry	37·00—4 mos.

ALLEGHENY COKE.

250 tons Gray Forge	$29·00—time.

CONNELLSVILLE COKE.

150 tons Gray Forge	$28·00—4 mos.

LOUISVILLE.

Mr. GEO. H. HULL, under date of Jan. 5, writes us as follows: The market is firmer for nearly all grades of Pig, though sales are confined principally to cash transactions, on which a considerable concession is made on time figures. The usual time, four months, is allowed on quotations below:

HOT BLAST CHARCOAL.

No. 1 F'dry, from Hanging Rock Ores	$40·00 @ 41·00
" 2 " " " "	35·00 @ 37·00
" 1 Forge, " " "	30·00 @ 31·00
" 1 F'dry, from Tennessee Ores	34·00 @ 40·00
" 2 " " "	36·00 @ 37·00
" 1 Forge, " "	30·00 @ 31·00
" 1 F'dry, from Alabama Ores	37·00 @ 40·00
" 1 " " Iron Mountain Ores	40·00 @ 41·00

HOT BLAST STONE COAL.

No. 1 F'dry, from Missouri Ores	34·00 @ 36·00
" 2 " " " "	32·00 @ 34·00
" 1 Forge, " " "	29·00 @ 30·00

COLD BLAST CHARCOAL.

Car Wheel from Hanging Rock Ores	60·00 @ 65·00
" " Tennessee Ores	56·00 @ 58·00
" " Alabama Ores	58·00 @ 60·00
" " Georgia Ores	58·00 @ 60·00
" " Missouri Ores	55·00 @ 60·00
" " Kentucky	55·00 @ 60·00

BOSTON.

BOSTON, Jan. 3, 1874.—The demand for refined Bar Iron is light, but the market is firm on account of advices from the mills, but sales continue to be made at our last quotations, principally in small lots. Pig Iron is quiet, and there is hardly enough doing to fix prices. The market is steady, however, and the tendency is slightly upward. We quote yard lots of American Pig Iron at $33 to $45 per ton, including No. 2 extra at $35 to $37, and No. 1 at $38 to $40. We quote Eglinton at $46, Coltness at $50, and Charcoal at $55 to $65. American and English Refined Bar Iron is selling at $75 to $85 per ton for the ordinary sizes, and $90 to $95 for extra sizes, according to size. Cast Steel is selling at 16c., gold, for English, 17⅛c., currency, and 14⅛c. to 16c. for American, currency, with fancy brands of English selling at 17c., gold. Anchors are selling at 8⅛c. per lb.; Chain Cables (⅝ to 2 in. thick), 7c. to 8⅛c. per lb.; Coil Chains, 7⅛c. to 16c., from 3-16 to 1⅛ in. We quote Boiler Plates at 7c. to 7⅛c. for Flanges, 5c. to 5⅜c. for C No. 1, and 4¾c. to 5c. per lb. for Common and Tank. Russia Sheet is steady at 18c., gold, and 19½c. to 20c., currency, for perfect lots. English and American do. are selling at 7c. to 8c. per lb., currency. We quote Galvanized Sheet Iron, No. 20, at 11c.; Nos. 21 to 24, 12c.; 25 and 26, 13c.; 27, 14c.; 28, 15c. Nails are selling at $4·75 for 10d. to 60d. and other sizes at a range of $5·00 to $8·75 per 100 lbs. Horse Nails, 28c. for No. 7.—*Com. Bulletin.*

BALTIMORE.

Messrs. WYETH & BROTHER, Iron and Steel merchants, South Charles and Lombard streets, report us the following prices under date of Jan. 6, 1874: There has been a marked improvement in trade here during the past week, considering it was the usual time for stock taking, and a general closing up of the past year's business. Quotations are firm, but unchanged.

AMERICAN REFINED BAR IRON.

1 to 6 wide by ⅜ to 1 thick; 1 to 4½ wide by 1⅛ to 2 thick	3⅛c. to 3⅜c.	per lb.
Round and square, ordinary sizes, from ¾ to 2 inclusive	3⅛c. to 3½c.	"
Hoop Iron, 1⅛ wide and upward	4⅜ to 5c.	per lb.
Band Iron, from 1⅛ to 4 in. wide	4 to 4⅛c.	"
Horse Shoe Iron ⅜ to 1 wide by ⅜ to ⅝ thick	5 to 5⅛c.	"
Norway Nail Rods	7½ to 8 c.	"
Black Diamond Cast Steel, Flats, Squares and Octagon, ordinary sizes	16½c.	"
Machinery Steel	11⅛c.	"
Cast Spring Steel	11c.	"
Homogeneous Steel Plate	13c.	"
Perkins' Horse Shoes, per keg of 100 lbs.	$6·37½	
" Mule Shoes " "	7·37½	

Common Horse Nails, from 14c. to 18c per pound.

	10	9	8	7	6	
Putnam Horse Nails	23	24	25	26	28c.	per lb.
Globe Horse Nails	23	24	25	26	28c.	per lb.

R. R. Spikes.......5½ by 9-16 at 3⅜c. to 4c. per lb.

FOREIGN.

GREAT BRITAIN.

Messrs. J. Berger Spence & Co., London, Glasgow and Manchester, under date of Dec. 20, 1873, report:

Metals.—An uneventful week has been passed in this market; orders are scarce, as usual at this time of the year, and producers appear satisfied to wait the course of events, which they consider likely to run in their favor with the turn of the year. For Scotch Pig Iron Warrants values have improved since our last, and a fair amount of transactions have taken place in them. Makers are also firmer in their demands. The shipments for the week ending December 15 are reported as 11,215 tons against 16,241 tons in the corresponding week of last year. Makers of second-class brands of manufactured Iron are still barely supplied with orders, but manufacturers of first-class productions apparently have not so much cause for complaint. A very slight improvement is perceptible in Copper, but the trade is still far from strong. By cable advices lately to hand we learn that the charters from Chili for the first fortnight in November amount to 2100 tons, of which quantity 1200 tons Bars and 500 tons Ores and Regulus are for Great Britain, and 400 tons Bars for the Continent. The stock on the coast is given as 5800 tons. Another rise has taken place in Tin, and smelters of English are firm at the advance. Lead is in brisk demand, and high prices appear likely to be the rule for some time to come. There is no improvement in the value of Spelter, and small lots of foreign have been sold at a reduction.

IRON—"Ayresome" Yorkshire Pig Iron, No. 1, 95/; No. 2, 90/; No. 3, 87/6; No. 4 (Foundry), 85/; No. 4 (Forge), 85/ net cash, or 2/ extra 4 months' bills. Scotch Pig warrants, 106/ to 107/. Staffordshire Bars, £12 to £14. Hoop Iron, £13. 10/ to £14. Gas Tubes, 50 per cent. off new list. Boiler Tubes, 32½ per cent. discount.

COPPER.—English Tough Ingot, nominal, £92 to £94. Chili Bars, £82 to £84.

TIN—English Ingot, nominal, £122 to £123. Straits, £120 to £121.

TIN PLATES.—Best Coke, I. C., 30/ to 34/; Charcoal, I. C., 34/ to 38/ per box.

LEAD.—Best English Soft Pig, £24 to £24. 10/. Refined Red Lead, £26 to £27.

ANTIMONY.—French Star, £56 to £57.

SPELTER.—Silesian, Special Brands, £26. 10/ to £27. English, Best Brands, £27 to £28.

Our English Letter.

Review of the British Iron, Steel, Metal and Hardware Trades.

(From our Regular Correspondent.)

SHEFFIELD, Eng., December 16, 1873.

The wages question is once more the bugbear of the hour. The 1500 Bessemer men of John Brown & Company, Sheffield, have decided not to accept the reduction of 10 per cent., of which they received notice a fortnight back, and have consequently struck. The firm have declined to refer the matter to arbitration, and have resolved to maintain the line of action which they have adopted. You will probably recollect that I have already detailed some of the reasons which have led to this step being taken.

Following suit, the Parkgate Iron Company, whose large works are situated near this town, have lowered the wages of some of their men 25 per cent.; a portion of the employees have struck, but some have agreed to remain at work at the reduced rate of pay. On Friday the Iron Trade Conciliation Board of South Staffordshire and East Worcestershire met at Wolverhampton, Mr. G. G. Barker (chairman of the ironmasters association) presiding. That gentleman said that a conference had been held between the employers of that district and the Northern ironmasters, and that the following terms had been mutually agreed upon: "That the maximum rate of wages for puddlers (other iron-workers' wages being in the same established proportion) should be 12/6 per ton, and the minimum 8/6; that the selling price of iron shall be ascertained in the two districts of South Staffordshire and the North of England in the same manner as heretofore in all respects, and upon the average of these results the price of puddling for the following quarter shall be fixed at 1/ for every £1 of selling price, with the fractional fluctuations as before; that 12/6 be paid for puddling from January 3 to April 4, 1874, inclusive; and that this basis of settling ironworkers' wages shall be binding on both parties till the first Saturday in 1877."

The representatives present on behalf of the men strongly objected to the minimum, urging that it would be unjust to fix the two extremes as proposed. Mr. Capper, a leading delegate, went so far as to say that if the masters thought the men would ever again work for 8/6 per ton, he begged they would undeceive themselves. They (the men) proposed that the minimum should be 10/, and the maximum 13/, such arrangement to continue for twelve months. After a rather lengthy discussion it was agreed that a meeting should be held as soon as possible, at which masters and men in both parts of the country should be represented, in order to solve the difficulty. The men have since met amongst themselves at Bilston and Darlington, and have decided to adopt the same terms as those proposed by Mr. Capper. The matter is thus in abeyance until this further conference shall have been held.

The general manufactured iron trade is moderately busy, and ship builders are actively engaged on the Clyde. *Iron* says:

"There were thirteen vessels launched last month, of an aggregate tonnage of 23,000 tons, which, on reference to the figures given below, is seen to be 8500 tons in excess of the tonnage launched in November, 1872. It may further be seen that the tonnage launched during the past eleven months exceeds that launched in the same period last year by 30,000 tons, and that it is 3000 more than was launched during the whole of last year. The disparity is still greater when the tonnage launched in former

years is taken into consideration. In the following table there are given the number and tonnage of the vessels launched in the month and eleven months ending 30th November for the present and four preceding years:

	Month.		Eleven Months.	
	Vessels.	Tons.	Vessels.	Tons.
1873.....	13	23,000	146	227,500
1872.....	17	14,500	177	197,500
1871.....	12	18,000	156	168,000
1870.....	17	15,550	163	160,000
1869.....	20	20,000	200	180,000

"Of the thirteen vessels launched last month four were sailing vessels. Two of these were of 1900 tons each, and another was of 1600 tons, all three being built for the Australian trade. The fourth was a wooden vessel of 270 tons, the first built by the Co-operative Engineering and Shipbuilding Company. Of the steamers there were three of 3000 tons each, and 500 to 550 horse-power. They were: The Neckar, for the Norddeutscher Lloyd's Bremen and New York trade, built by Messrs. Caird & Co., Greenock; the Dominion, built for the Mersey and New Orleans trade of the Mississippi and Dominion Shipping Company, Liverpool, by Messrs. McMillan & Sons, Dumbarton; and the Vancouver, built by Messrs. Henderson, Coulborn & Co., for the China Trans-Pacific Steam Shipping Company's Hong-Kong and San Francisco trade. There were also the Martaban, 2513 tons, and 350 horse-power, built by Messrs. Denny, Dumbarton, for Messrs. Patrick, Henderson & Co.'s Clyde and Rangoon trade; the Glenearn, 2200 tons, and 320 horse-power, built for the Glen line of London and China traders, by the London and Glasgow Iron Shipbuilding and Engineering Company, and owned by Messrs. A. C. Gow & Co., Glasgow; and the Tenedos, 1500 tons, and 250 horse-power, built by the same company for the Globe Steamship Company, of London. The Cunard Company also had a steamer of 1100 tons launched, and the London and Southwestern Railway Company had a steamer of 400 tons launched for their French channel trade."

In the Middlesborough district there is no great change. Pig iron is pretty firm at £4. 5/ for No. 3. The returns of the association for November show that out of 139 blast furnaces 132 are in blast, and that 19 new ones are in course of erection.

The rail makers are slack, and bars are not inquired for. In the Sheffield district there is no change of note to record. There are more orders to hand for tool steel, steel wire, cast and miscellaneous kinds of steel, than has been the case for some time past, but, as a rule, they are not very heavy, and are chiefly on home and Continental account. In consequence of the decline in the Bessemer branch, spiegeleisen is rather easier in most cases. In some instances it is stated that prices have been lowered 10/ to 15/ per ton. Swedish and Russian irons almost invariably follow the course of the file and certain other trades. These latter are now slack, hence it is not at all surprising to find Swedish brands easier to buy. Quotations are on an average: Pig, £8. 10/ to £9; blooms, £15. 10/; billets, £15 to £16; rolled bars, £20; hammered bars, £19 to £20; nail rods, £19. 10/ to £20; W and other better brands, £21 to £24; all f. o. b. at Gothenburg, and all net cash. Russian brands are not so much inquired after at present.

In cutlery nothing new has transpired. Christmas is now near upon us, but I hear that very few firms are able to afford their men that extra work which they usually give out in the few weeks immediately preceding Christmas. Some can do so on orders, but others must do it out of stock, if they do it all. American agents and travelers are sending literally blank order sheets, and do not speak at all hopefully of future prospects.

The bulk of the hardware industries of Birmingham are doing very well indeed. The file makers of that town have advanced prices, and iron braziery goods have gone up 10 per cent., owing to an advance of that extent in the men's wages. The tin plate workers of Wolverhampton are on the move for an additional 10 per cent., and declare "no surrender" unless they get it, having united all the tin plate workers of the kingdom in one union, in order to get what they want. The iron trade of South Staffordshire is quite firm. In no case is there any faltering in prices recorded. The South Wales works are not, as a rule, fully engaged, but several of them—notably Aberdare and Ebbw Vale—are showing rather more animation. The transfer of Cyrfarthfa is stated to be "nearly complete," despite which one well-informed correspondent says he "shall not credit any sale or transfer until it is officially announced."

Metals have not undergone any material alteration since I last wrote. Messrs. Von Dadelzen & North say: Tin has advanced, with a good amount of business, but other metals have been quiet. The dense fog has materially interfered with all operations. The Bank rate was reduced to 4½ per cent. yesterday. Copper has been very quiet, and but little business reported in Chili bars; named brands have realized £83. 10, but good ordinary brands have been sold at £82. 10/. Wallaroo has changed hands at £96, at which there are sellers now. No change in English. Tin: a large busines has been done this week at advancing prices. Banca from £115 to £118, and Straits from £115 to £120, both on the spot and to arrive per steamer, and also for forward delivery. The Dutch market has also improved in the same proportion from 66¼ fls. to 69½ fls. Billiton, nothing done. English tin firm at official quotations. Tin plates continue in demand, with the prospect of higher prices. Lead maintains its position, at £24. 5/. Spelter: Very little doing; English unaltered; Silesian, in outports, has realized £26. 15/; and Belgian has been sold at the same price. Quicksilver quite nominal.

The long series of railway accidents in this country has drawn public attention to them. The following statistics, given by *Chambers' Journal*, will perhaps be of interest on your side of the Atlantic: "On the first of January, in the present year, we had 8512 miles of double line of railway finished and open in the United Kingdom, together with 7032 miles of single line, making 15,544 miles in all. These railways, with a part of the expense for other lines in course of construction, had cost the stupendous sum of £570,000,000, averaging about £36,000 per mile (if we adopt the usual and convenient plan of debiting the mileage with the whole expenditure). This money had been raised in three different ways—£240,000,000 ordinary shares, £180,000,000 preference and guaranteed shares, £150,000,000 loans and debenture stock. The companies had, on that day, power to raise nearly £80,000,000 more capital; which, if all raised and expended, would swell the total outlay to something like £650,000,000. Well, such being the mileage and the cost, how many passengers did the companies carry in 1872, and what did the fares by these passengers amount to? The passengers were 423,000,000, and they paid £23,300,000—about 1 1 for every journey on the average, long and short. If we want to know how far cheap fares encourage passenger-trade, the figures at hand are very instructive: 38,000,000 first-class passengers paid £4,300,000; 72,000,000 second-class paid £4,200,000; while 313,000,000 third-class paid £10,300,000. There were nearly thrice as many third-class as first and second put together, and they paid more than as much money as the other two. The remainder of the amount earned by passenger trains was obtained by the conveyance of season ticket holders, extra luggage, parcels, carriages, horses, dogs, and mail bags. The goods traffic brought more revenue than the passenger—£29,000,000, against £23,300,000. The total receipts, rather over £52,000,000, were divided into two almost exactly equal parts, one to pay working expenses, the other distributed in the forms of interest and dividends. This last named half, the net profit, amounted to about 4½ per cent. on the total expenditure—not a ruinous return certainly, but less than it ought to be. Every train earns about 5.4 per mile, on an average. The aggregate weight carried by the goods trains was something enormous—106,000,000 tons of coal and other minerals, 73,000,000 tons of general merchandise. The locomotives traveled more than 190,000,000 miles, as far as from the earth to the sun and back again! The rolling stock comprised 11,000 locomotives, 23,500 passenger carriages, 8500 other vehicles attached to passenger trains, and 300,000 wagons and trucks."

London Metal Market.

(From The Mining Journal.)

	£.	s.	d.	£.	s.	d.
Copper—₱ ton.						
Best Selected.....	93	0	0	94	0	0
Tough Cake & Tile.....	91	0	0	92	0	0
Sheathing and Sheets.....	98	0	0	100	0	0
Bolts.....	102	0	0	103	0	0
Bottoms.....	102	0	0	103	0	0
Old.....	85	0	0	—	—	—
Burra Burra.....	91	0	0	92	0	0
Wire..... ₱ lb.	0	1	0¾	—	—	—
Tubes..... "	0	1	0¾	0	1	1
Brass—₱ lb.						
Sheets.....	0	0	10	0	0	11
Wire.....	0	0	10¾	—	—	—
Tubes.....	0	0	11¾	0	0	11¾
Yellow Metal Sheathing....	0	0	8¾			8¾
Sheets.....	0	0	8¾	—	—	—
Spelter—₱ ton.						
Foreign on the spot.....	27	0	0	28	0	0
" to arrive.....	—	—	—	—	—	—
Zinc—₱ ton.						
In Sheets.....	33	0	0	52	10	0
Quicksilver—₱ bottle.	10	0	0	20	—	—
Tin—₱ ton.						
English Blocks.....	120	0	0	—	—	—
Ditto Bars (in brls.).....	121	0	0	—	—	—
Ditto Refined.....	122	0	0	—	—	—
Banca.....	118	0	0	119	0	0
Straits.....	120	0	0	121	0	0
Tin Plates—₱ box.						
IC Charcoal.....1 qual.	1	17	0	1	19	0
IX " .....1 qual.	2	3	6	2	5	0
IC " .....2 qual.	1	15	0	1	17	0
IX " .....2 qual.	2	1	0	2	3	0
IC Coke.....	1	9	0	1	11	0
IX "	1	15	0	1	17	0
Canada Plates.....₱ ton.	21	0	0	21	10	0
" at works.....	20	0	0	21	0	0
Iron—₱ ton.						
Bars Welsh, in London.....	12	0	0	12	5	0
" to arrive.....	12	0	0	12	2	6
Nail Rods.....	12	5	0	—	—	—
Nail Rods, Staff'd in L'ndon	13	10	0	—	—	—
Bars.....	12	10	0	14	0	0
Hoops.....	14	5	0	15	0	0
Bars at Works.....	11	10	0	—	—	—
Hoops ditto.....	13	10	0	14	0	0
Sheets, single.....	14	10	0	15	10	0
Pig, No. 1, in Wales.....	5	0	0	6	10	0
Refined metal ditto.....	7	0	0	8	0	0
Bars, common ditto.....	11	10	0	—	—	—
Do. merchant, Tyne or Tees	11	5	0	11	10	0
Ditto, Railway, in Wales...	10	5	0	11	0	0
Ditto, Swedish, in London.	19	5	0	19	10	—
To arrive.....	20	0	0	21	0	0
Pig, No. 1, in Clyde.....	5	5	0	5	15	0
Ditto, f.o.b., Tyne or Tees..	4	10	0	5	10	0
Ditto, Nos. 3, 4, f.o.b.....	—	—	—	—	—	—
Railway Chairs.....	5	5	0	6	0	0
" Spikes.....	13	10	0	14	0	0
Indian Ch'coal Pigs in L'don	10	0	0	12	0	0
Steel—₱ ton.						
Swedish, in kegs (rolled)...	—	—	—	—	—	—
Ditto (hammered).....	21	0	0	—	—	—
Ditto, in faggots.....	22	0	0	—	—	—
English, spring.....	24	0	0	25	0	0
Lead—₱ ton.						
English Pig, common.....	24	0	0	24	5	0
Ditto, LB.....	24	5	0	—	—	—
Ditto, WB.....	25	0	0	—	—	—
Ditto, Sheet.....	25	5	0	25	10	0
Ditto, Red Lead.....	25	10	0	—	—	—
Ditto, White.....	30	0	0	32	0	0
Ditto, Patent Shot.....	27	5	0	—	—	—
Spanish.....	23	5	0	23	7	6

* At the works, 1s. to 1s. 6d. per box less. Terne plates 2s. per box below tin plates of similar brand. ‡ Nominal. † Add 6s. for each X.

Special Notices.

REMOVAL.

HUMASON & BECKLEY MFG. CO.

V. P. Humason, Treasurer & Agent.

Hardware & Cutlery,

have removed from

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DAYTON & LAMBERSON'S

(Copyrighted **Standard** Lists.)

DISCOUNT BOLT LIST.

Book form, Common and Philadelphia Lists, 20 discounts.

DISCOUNT SCREW LIST.

Iron Screws, 13 discounts.

PRICE REDUCED.

Bolt List, 60c.; Screw List, 50c. per copy. Address,

DAYTON & LAMBERSON, 83 Duane Street, N. Y.

Consignments Wanted.

The subscribers, doing a large and old established business in Stoves, Tin and General Hardware, have completed a large brick addition to their premises, and are prepared to receive proposals from manufacturers desirous of introducing their goods to the Maritime Provinces. Our facilities for doing a large commission business in Agricultural Implements, Register Grates and Mantles, Stoves, Furnaces, and Hardware Specialties, are unsurpassed by any firm in the British Provinces. Address,

BOWES & EVANS, Canterbury & Church Sts., **Saint John,** New Brunswick.

Co-Partnership Notice.

PHILADELPHIA, January 1, 1874.

W. R. Gurnis is this day admitted as a partner in our firm. The style of the firm remains as heretofore.

MALIN BROTHERS,

Iron Commission Merchants,

No. 228 Dock Street.

To Lease on Royalty.

A tract of eight hundred acres of Iron Lands, in Luzerne county, Pa. Five veins of ore aggregating fifteen feet thick. One vein of Manganese Ore, well adapted to the manufacture of steel.

Call on or address *JOSEPH SMITH,*

Stoddartsville, Luzerne Co., Pa.

Or *M. R. Murphy,* 441 Broadway, N. Y.

Wanted,

In the neighborhood of Philadelphia or New York, a situation as Mechanical Engineer or Manager in a manufacturing establishment, where active service is considered valuable.

The advertiser has a preference for the iron trades, and is best acquainted with them, but has had large experience in the management of men and business in a general way.

Communications addressed to the editor of this publication will be responded to at once.

MANUFACTURERS

desirous of introducing their goods to the **British** and **Continental** Markets, are advised to insert advertisements in the newspaper **"IRON,"** published every Saturday, at *99 Cannon Street, London, E. C.*

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Special Notices.

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Machine Shop

IN THE CITY OF

Rochester, N. Y.

It is now rented in part to Mechanics who own their machinery, the Shafting, Wheels and Main Belting only belonging to us.

The building contains 30,000 feet of floor room, and is four stories in hight.

There is connected with it a three hundred horse water-power at the dryest season of the year.

We will exchange the same for property near this city, or will make favorable terms with any man who has a business large enough to use the whole building and is disposed to locate there.

L. C. & H. L. PRATT,

78 Beekman Street,

NEW YORK.

500 Men Wanted

To Sell on Commission

Markland's Patent Saw Gummer & Sharpener.

Henry Disston says: "I consider Markland's Patent Saw Gummer the best thing of the kind in the market."

Merrick & Sons: "It gives us complete satisfaction and accomplishes all that is claimed for it."

E. Andrews, Saw Manufacturer: "I have been using another make, but considers yours decidedly the best."

Steinway & Sons', Piano Manufacturers: "Do not hesitate to recommend it as a first-class machine."

John L. Knowlton, Millwright and Machinist: "I have been using one of Markland's Machines for dressing saw teeth, and consider it the best machine in use for that purpose."

Address, **T. T. MARKLAND, JR., Cincinnati, Ohio.**

MANAGER WANTED.

Wanted a competent person to manage the chopping, coaling and working of a charcoal furnace. One accustomed to working specular and magnetic ores preferred. References required. Address,

GEO. B. LOBDELL,

Prest. C. F. I. & S. Co., **Wilmington, Del.**

Wanted,

A young or middle aged active and energetic partner, with twenty to forty thousand dollars capital, in an old established and well paying wholesale business in a healthy Western city. Best of references given and required. Address, **B.,**

Office of The Iron Age, 10 Warren Street, N. Y.

A young man desires a situation as manager for a furnace company. Has eleven years experience in the business; best of reference given. Would prefer to go W

Address **"IRON,"**

Allentown Lehigh Co., Pa

Special Notices.

CHARCOAL IRON.

Parties owning a large and very superior Furnace, 90 miles from Cincinnati, and an unlimited supply of the best Iron Ore, adjoining it, with abundance of timber for making Charcoal, wish to enter into arrangements with men of experience and means to run the Furnace for a term of years, under arrangements to be agreed upon. There is no place in the United States where Charcoal Iron can be made at as low a cost, or where transportation to market will cost less. Apply to

JOHN A. POMEROY,

No. 47 West Second St., Cincinnati, O.

R. T. HAZELL, AUCTIONEER.

By R. T. Hazell & Co.,

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Our REGULAR SALES of HARDWARE, CUTLERY, FANCY GOODS, &c., will be held on TUESDAYS and FRIDAYS throughout the season.

CASH ADVANCES made on CONSIGNMENTS without additional charge.

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MAKERS OF

STERLING ANTHRACITE PIG IRON

FOR FORGE AND FOUNDRY USE.

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CANADIAN BANK OF COMMERCE.

Capital - - $6,000,000, Gold.

Surplus - $1,500,000, Gold.

The New York Agency, No. 50 Wall Street, buys and sells Sterling Exchange, makes Cable Transfers, grants Commercial Credits, and transacts other Banking Business.

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A Weekly Illustrated Journal, edited by **W. H. MAW and JAMES DREDGE.**

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This most successful English Engineering Journal, containing thirty-six pages, weekly, illustrating the latest advances in Civil, Mechanical, Mining and Military Engineering Science, both in Europe and America, can now be obtained by American subscribers, post paid, for $9.30, currency, per year, sent to the New York office of the Journal.

All the important details of the buildings and novel machinery at the great Vienna Exposition will be illustrated and described in *Engineering* the current year; and this, with illustrations of all the larger American engineering structures, will render it invaluable to every American Engineer, Architect, Iron Master and Machinist.

The best medium for advertising American Machinery to the attention of European capitalists.

Send for specimen copy, free.

NEW YORK, July 1, 1873.

Map of the Mineral Resources of Chattanooga, Tennessee, and Vicinity.

Compiled from surveys made with a special view of showing the location and boundaries of the three different kinds of Iron Ores and Coal Measures lying within a radius of about one hundred and twenty-five miles of Chattanooga. It also shows the different Railroads and Navigable Rivers and principal towns within this district, and routes to Washington, New York, Louisville, St. Louis, Cincinnati, Memphis, New Orleans, Mobile, and principal ports on the Atlantic Coast. This map is not published in the interests of any individuals nor landed proprietors, but with the view of showing to parties who may be interested in the manufacture of iron a section of country containing three different kinds of Iron Ores (which are shown in different colors), as well as coal in the greatest abundance, and their relative positions to each other. The map is gotten up by the publisher after an intimate knowledge of the country for twelve years, the last year of which he has employed two competent engineers in making special surveys, with a view of making it as nearly accurate as possible. It is about 27 inches by 36 inches in size, upon a scale of 15 miles to one inch, and printed on firm linen paper and put up in cases. It will be sold by subscription only, at the price of five dollars, and will be ready for delivery about the 25th of January next. Subscriptions can be made to the publisher, S. B. LOWE, Chattanooga, Tennessee, to the *American Manufacturer*, Pittsburgh, Pa., or to H. B. NEWHALL, No. 11 Warren St., New York.

For Sale.

Iron Foundry For Sale.

Any person wishing to engage in the foundry business, may learn an opportunity to purchase new building just erected for said business, all complete and ready to be started without delay or additional expense. A shovel factory adjoining the foundry will furnish a large and regular demand for castings. For further particulars, address,

H. F. A., Box 488, Northampton, Mass

Or said property would be exchanged for unencumbered productive real estate.

Hardware Store.

For Sale on easy terms an entire stock of Hardware, Stoves, Tin Ware and House Keeping Articles, in Woodbridge, N. J., one hour from New York by rail. Rent moderate; good location; worth about $5000. *DAVID M. STIGER,* Assignee,

54 Cortlandt, Street, N. Y.

Dec. 20, 1873.

For Sale, &c.

SAFE INVESTMENT.

For Sale,

Big Muddy Coal, Timber & Farm Lands.

The whole or one interest in 7463⅝ Acres of the Big Muddy Smelting Coal Lands, in Jackson County, Illinois. Vein 3 and 6 feet in 80 feet from surface; five improved Farms, with 246 acres under fences; Timber, such as White and Burr Oak, Walnut, Poplar, Ash; being 500 acres. The Timber alone will pay for the land. The St. Louis and Cairo Railroad runs through said lands, two miles from Murphysboro, the county seat of Jackson County, Ill. Will sell the whole for $75 per acre, and take half or one-third interest. Address

DOBSCHUTZ & AREND,

Owners of three Mines in St. Clair Co., Illinois,

Belleville, St. Clair Co., Ills.

Mills and Water Power.

FOR SALE, VERY LOW,

The old "Green River Works" of J. Russell & Co., near the depot at Greenfield, Mass.

The cutlery business having been removed to Turners Falls, the Works near Greenfield depot, with all appurtenances, and about 100 horse power, **will be sold low and on very favorable terms.** The Works, which are on both sides of Green River, consist of Stone, Brick and Wood Factory Buildings, and were used for many years in the manufacture of cutlery; but they are well adapted to any manufacturing business. The property is so situated that it can be divided, if desired, into two almost equal portions.

In view of the nearness of the property to the new Hoosac Tunnel Railroad Line and the beautiful town of Greenfield, it must greatly increase in value.

Here is a rare chance. Who will secure it?

Address or call on *D. C. G. FIELD,*

Treasurer John Russell Cutlery Co.,

Turners Falls, Mass.

FOR SALE.

A first-class Hardware Stove and Tin Store, located in one of the best towns in Ohio, doing a business of about $65,000 per year. Stock will invoice about $18,000. Satisfactory reasons given for selling.

Address, **N. & B.,**

Care **Office of The Iron Age, 10 Warren St., N. Y.**

SECOND-HAND MACHINERY For Sale.

We have now on hand and will sell at very moderate rates, the following lot of second-hand machinery, viz.:

Five Double Hoisting Engines, suitable for mining, tunneling or other purposes. Each of these engines has two cylinders, 7½ in. diam. by 18 in. stroke; two drums, 4 ft. diam. by 4 ft. long; geared to engine in proportion of 8 to 1, and are provided with disconnecting gear and friction brakes.

One 8 Horse-Power Portable Lane & Bodley Engine. Cylinder, 6 in. by 12 in., nearly new.

One 25 Horse-Power Portable Engine, in first rate condition. Cylinder, 10 in. diam. by 24 in. stroke.

One 30 Horse-Power Portable Engine, with Circular Saw Mill and Saw complete.

One 12 Horse-Power Stationary Engine. Cylinder, 8 in. by 12 in.

Five 4 Horse-Power Stationary Engines. Cylinder, 4 in. by 10 in.

One 30 Horse-Power Locomotive Boiler, in first-rate condition, nearly new.

One 25 Horse-Power Locomotive Boiler, in first-rate condition, nearly new.

One 30 Horse-Power Vertical Boiler.

One 20 Horse-Power Vertical Boiler.

Two Flue Boilers, 36 ft. long, 42 in. diam., each with two 14 in. flues, in good order.

Four No. 6 Sturtevant Blowers.

One No. 2 Sturtevant Blower.

Two No. 4 McKenzie Blowers.

One No. 6 Andrew's Centrifugal Pump.

One No. 6 Turbinate Centrifugal Pump.

Seven No. 0 Cameron Pumps.

One Knowle's Pump.

One Earle Pump.

Three Woodward Pumps.

For further particulars, address,

WM. E. TANNER & CO., Richmond Va.

For Sale,

With or Without the Real Estate,

The Orange County Foundry and Machine Shop,

MIDDLETOWN, N. Y.,

Established 1842.

The most desirable property on the line of the Erie and Midland Railways. Has a large and valuable assortment of Patterns. Extensive and increasing trade, and affords parties wishing to enter the Iron Business an unusual opportunity. Satisfactory reasons given for selling.

Parties desiring to purchase are requested to call and examine, or address the undersigned,

E. P. WHEELER, Middletown, N. Y.

Valuable Iron Works, For Sale.

The undersigned offers for sale the Iron Works in Pottsville, Schuylkill County, Pa., known as "The Washington Works," consisting of a

Large Stone Machine Shop & Foundry,

Brick Pattern House, Erecting Shop, Stone Blacksmith Shop, Brick Office, and Lot of Ground containing in front 195 feet 3 inches, and in depth 260 feet.

There will be sold with the above a large and valuable collection of Patterns, Heavy Crane Flasks and Heavy Core Spindles for making heavy Castings and Pipes of all sizes; Turning and Planing Tools.

The Works can be put in immediate operation. A favorable opportunity is here presented for enterprising men. The demand for Castings and Machinery is constantly increasing in this region. The property will be sold on liberal terms. ***If not sold in a reasonable time it will be for Rent.***

For particulars apply to

J. W. ROSEBERRY, Trustee, Pottsville, Pa.

FOR SALE.

Hardware, Stoves & Tinware & Business House,

Doing a **Cash Business** of **$20,000 per annum** at **25 per cent. profit,** in **Central, Ills.** For information address **"W."**

Office of The Iron Age, 10 Warren St., N. Y.

For Sale or To Let.

The Stove Foundry lately occupied by Munsell & Thompson, situated at Elizabethport, N. J.: can be adapted to any manufacturing purpose, having coal and iron within one block, direct from the mines. Communication with New York 32 times a day by rail, and 4 times by steamboat. Within half a block of the river. Will be let for one or more terms of years. Apply to or address

A. RAIZ & CO.,

32 Broadway, N. Y.

THE NICHOLSON FILE.

All Nicholson Files are cut with the Patent *Increment Cut*, an invention owned and controled exclusively by us, the file cut in this manner being Patented as a new article of manufacture, and differs from all other machine cut files (all of which have their teeth cut with equal spaces) by being cut with teeth slightly *expanding or increasing in size and space from the point*, thus avoiding the too great regularity of teeth common to all other machine cut files. The tendency of all cutting tools with teeth or cutters placed at regular distances from each other may be illustrated (to the machinist at least) by the fluted reamer—as it is well known that if a round reamer be made with (say 12) teeth whose spaces are equidistant, the hole reamed will *not* be round and smooth, but will approximate to a hexagon in shape. Whereas, if the same number of teeth be made of irregular distances, the hole reamed will be both round and smooth. The same is true of a file, hence the necessity of its having teeth at unequal distances, and to which we have applied the name of Increment Cut File, which possesses all the advantages of hand cut work, and the accuracy and uniformity of machine work. It is now upwards of seven years since this File was introduced to the public, and the demand has increased until our production is undoubtedly treble that of any File manufactory in the country.

We put all files under seven inches in boxes of either one-half or one dozen each. These boxes are neatly arranged, and open on the end, on which the kind is plainly marked with printed labels, acknowledged improvements on the old methods.

The "*Increment File*" is not an experiment, but an established fact, and already has acquired a legitimate demand for upwards of 500 dozen per day. We employ no *regular Travelers*, but our goods may now be found in the hands of the principal jobbers and dealers throughout the country.

Prices and terms will be forwarded on application to

NICHOLSON FILE COMPANY,
Providence, R. I.

1816. *H. F. F.*
1844. *H. F. F. & SON.*
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1868. *P. A. F. & CO*

PETER A. FRASSE & CO.,

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IMPORTERS OF

Stubs' Steel Wire, Files and Tools,

Grobet Swiss Files,

Extra Quality English Spring Steel Wire,

Nos. 1 to 34.

Steel Wire for Sewing Machine Needles and for other Purposes,

French Cold Rolled Sheet Steel,

Sizes, 22 to 36 Gauge.

Jewelers', Engravers' & Mechanics' Tools.

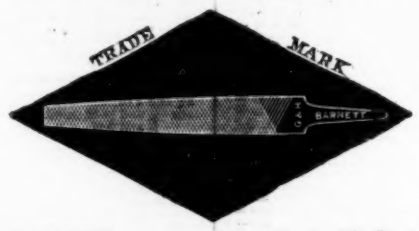
The only Agents in the United States for

HUBERT'S CELEBRATED FRENCH EMERY PAPER.

For Hatters' and Machinists' Use.

Black Diamond File Works.

Send for Illustrated Price List.



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G. & H. BARNETT. 39 41 & 43 Richmond St. Phila.

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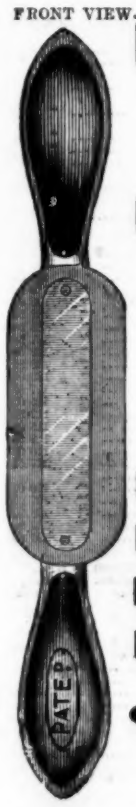

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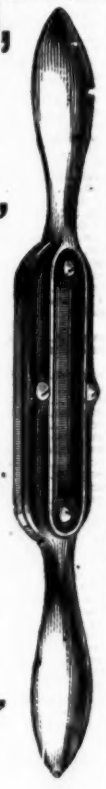

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WHOLESALE

HARDWARE HOUSE,

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HARDWARE FACTORS.

BATES' MANUFACTURING CO.'S GOODS.

Bonney's Pat. Hollow Augers & Spoke Trimmers.
Bonney's Patent Double-Edged Spoke Shave.
Bonney's Patent Adjustable Gate Hinge.
Bonney's Patent Sash-Fast and Lamp Bracket.

625 Market Street,

PHILADELPHIA

BUCK BROTHERS, Millbury, Mass.

Largest Stock and Best Assortment in the United States of

Shank and Socket Firmer Chisels.

Also, BEST QUALITY SOCKET FRAMING CHISELS,

COPPER AND ZINC

SASH CHAIN.

The Best and Cheapest made.

Chain and Pulley for Heavy Sash

F. & L. MANY & MARSHALL,

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Manufacturers of every description of

BUILDERS' HARDWARE,

Pure Bronzed Metal and Hand-Plated Knobs, Hinges, &c.,

Agents for Gautier's Black Lead Crucibles.

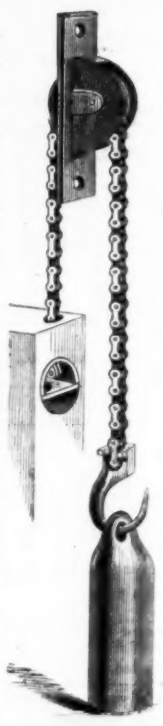
Agency and Depot of the TRENTON LOCK COMPANY.

THOMAS MORTON,

Manufacturer of

Brass & Copper Chain,

And patented attachments for same, for suspending windows, from 100 to 1500 lbs. Sashes can be suspended with my Chain and attachments in a shorter time and with less trouble than by using the ordinary common cord. I am now offering the Chain and fastenings cheaper than any other in the market. Also manufacturer of the MORTON & BREMNER'S Straight and Circular Spring Balances. Established in 1842.



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RIEHLE BROTHERS,

Ninth Street, near Coates, Philadelphia.

New York Store, 93 Liberty Street,
Pittsburgh Store, 56 Wood Street,

"The Celebrated Stock House Scale,"

New Style Testing Machines, all sizes, Wrought Iron Lever R. R. Track Scales, Parallel Crane Beams and Mortising Machines.

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J. M. KING'S STOCKS & DIES.

McCREA'S SHOE THREADS and TWINES.

G. F. ELLS' CURRY, CATTLE and PLANTATION CARDS

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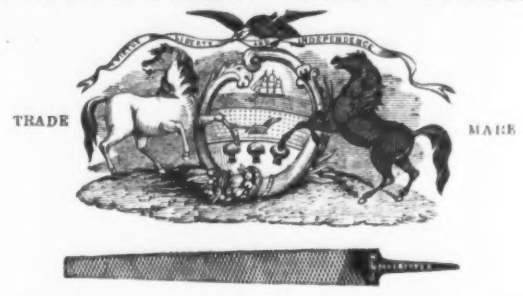

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Manufacturers of FIRST QUALITY FILES and RASPS ONLY,

Nos. 1732 & 1734 North Fourth Street, Philadelphia, Pa.

G. W. Bradley's Edge Tools.

Butchers' Cleavers,	**Axes and Hatchets,**
Bush Hooks, all patterns,	**Grub, Garden & Planters' Hoe**
Turpentine Tools, all kinds,	**Mill Picks, Mattocks & Picks**
Coopers' Tools, a specialty,	**Box Scrapers & Chisels,**
Ship Carpenters' Tools,	**Cotton Hooks & Samplers.**

N. WEED. 37 Chambers St.

FERNALD & SISE,

100 Chambers Street, NEW YORK.

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REPRESENT:

Reading Hardware Co.	**Barnes & Deitz.**	**Underhill Edge Tool Co.**
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Vulcan Horse Nail Co.	**Langstroth & Crane.**	**T. T. Rhodes.**
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MANUFACTURERS, IMPORTERS AND DEALERS IN

Hardware and Upholsterers' Brass Goods,

SOLE AGENTS FOR

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Page's Auxiliary Jaws.

Manufacturers of Judds', Prindle's and Combination Patent Curtain Fixtures, Locks and Curtis' Patent Raisin Seeder, Patent Twine Boxes, Picture Nails and Hooks, Escutcheon Pins, Coat and Hat Hooks; also Miscellaneous Iron and Brass Goods.

Small Brass and Iron Castings made to order.

64 Duane Street, NEW YORK.

JAMES C. HAND & CO.

COMMISSION MERCHANTS,

No. 614 & 616 Market Street, **PHILADELPHIA.**

AGENTS FOR:

William Penn, Reading and Norristown Pig Iron.
Reading Iron Co.'s (Crescent Brand) Nails, Boiler Flues, &c
Bar Iron, Plow Steel and Iron, South Easton Iron Wire.
Wm. Jessop & Sons' Steel and Norway Nail Rods.
Barrows, Savery & Co.'s Hollow Ware Castings, &c.
Fisher & Norris' "Eagle" Anvils and Vises.
Washington Mills Emery.
Heavy Hardware, &c., &c.

W. F. SHATTUCK & CO.,

113 Chambers and 95 Reade Street, New York.

MANUFACTURERS OF AMERICAN HARDWARE.

Coes & Taft's Pat. Wrenches.	**Mouse Traps. Wire Seives.**	**Yaw's Cow Bells.**
Axe, Pick, Sledge & Hammer Handles.	**Scale Beams.**	**Axes, Picks and Hatchets.**
Hatchet, Auger, Chisel & File Handles.	**Patent Tap Borers.**	**Hammers. Crow Bars.**
	Tool Chests.	**Sad Irons.**
Millets. Pat. Boot Jacks.	**Climax Horse Collars.**	**Boring Machines.**
Gimlets and Gimlet Bits.	**Brundage Horse Nails.**	**Cast Iron Hatchets.**
Augers and Auger Bits.	**Maguire's Wr't Iron Goods.**	**Coffee Mills.**
Cocoa Nut Dippers.	**Shattuck's Platform Counter Scales.**	**Star Steel Spoons' Stocks and Dies.**

New York Wholesale Prices, January 7, 1873.

HARDWARE.

Anvils.
Solid Cast Steel... ₩ ℔ 14c
Wright's... ₩ ℔ gold 12c; over 250 ℔s 12½c, gold
Armitage's Mouse Hole... gold 11c
Wilkinson's... ₩ ℔ gold 11½c
Eagle Anvils, ₩ ℔ 11c currency... dis 15 @ 15&5 %

Apple Parers.
Turn Table, Lightning, Conqueror... $8·50 ₩ doz
Reading... ₩ doz 8 00
Union... ₩ doz 9 00 }
Bay State, Paring, Coring and Slicing... 15 00 } dis
Skeleton " " "... 9 00 } 5 %
Climax Slicer... 9 00 }
Bay State Peach Parer... $11 00 @ 11 50
Lightning " "... 11 00 @ 11 50
Peach Stoner and Halver... 7 00

Augers and Bits.
Snell Mfg. Co... dis 15 @ 20 %
Russell Jennings... dis 10 %
Douglass Mfg. Co., Extra...
" " No. 1...
" " Hollow Augers...
Cushman's Expanding Hollow Augers... dis 20 %
Ives' Augers and Bits... dis 30&10 %
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" Hollow Augers... dis 30&10 %
" Expansive Hollow Augers... dis 30&10 %
" Expansive Bits... dis 20&10 %
Andrews' Bits... dis 30 %
Cook's Patent Augers... dis 40 %
" " Bits... dis 25&10 @ 40 %
Shepardson's Double Cut Bits... dis 20 %
Griswold's Patent... dis 20 %
CastSteel Cut Augers... dis 30&10 %
" Auger Bits... dis 30&10 %
Long Augers... new list dis 30 %
Bonney's Patent Hollow... $48 per doz—dis 25 %
Stearns' " ... $48 per doz—dis 30 %
Morse's Bit Stock Drills... dis 20 %
Nobles Mfg. Co. C. S. Cut Augers... dis 20&10 %
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Axes.
Blood's... $12 50 @ 14 00
Hunt's... ₩ doz $15 00 @ 17 50 net @ dis 5 %
Collins'... ₩ doz 11 00 @ 16 00 net @ dis 5 %
Hurd's... ₩ doz 12 50 @ 13 50
Schweitzer Mfg. Co.'s... ₩ doz 13 00 @ 15 00
Simmons'... ₩ doz 12 50 @ 14 00
Morris'... ₩ doz 12 50 @ 13 50
Red Jacket... ₩ doz 12 00 @ 12 50
Mann's... ₩ doz 12 50 @ 13 00
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Powell Tool Co., "Peerless"... ₩ doz 13 00 @ 14 50
Underhill's... ₩ doz 12 50 @ 13 50
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Nobles Mfg. Co. S. B... ₩ doz 12 50 @ 13 00
" D. B... ₩ doz 22 00 @ 23 00

Balances.
Chatillon's, Frary's, Morton's... new list dis 15 %

Bands.
Plated... add 10; dis 5 %
Iron... dis 15&5 %
Brass (Plated list)... dis 5 %
Oroide... add 15; dis 5 %

Bells.
Hand, Light Brass... dis 60&10 @ 65&5 %
White Metal... dis 45&10 %
Globe... dis 20 %
Abbe's... dis 10&10 %
Taylor's Patent Door... net
Western Gong... net
Brook's Crank... net list
" Pull... dis 15 %
Hart Mfg. Co., Crank and Pull... dis 50&10 %
Cow—Common Wrought... dis 20&10 %
Western... new list dis 20&10 %
Kentucky "Star"... new list dis 20&10 %
Dodge's Genuine Kentucky... new list dis 25 %
Yaw's Genuine... dis 20 %

Bellows.
Blacksmiths'... dis 15 %
Moulders'... dis 15 %
Hand Bellows... dis 10 %

Blind Fasteners.
Van Sand's... ₩ gross $14 00
Washburn's Patent... ₩ gross 14 00
Merriman's...

Blind Staples.
Boardman's Patent, ⅜ in. and larger... ₩ ℔ 37 c
" ⅝ in... " 42 c

Bolts.
Carriage and Tire, Ætna Nut Co... dis 60 %
Stove, Ætna Nut Co... dis 10&5 %
Cast Iron Barrel, Shutter, &c... old list dis 35&10 %
Wrought Iron Barrel... net
" " Square... dis 10&10 %
Carriage and Tire, Common... dis 70&10 %
" " Norway Iron...
Star, Philadelphia... dis 50 @ 50&10 %
Eagle, Philadelphia... dis 50 @ 50&10 %
Skelly's Phila. Norway Iron Finished Points... dis 50&5 %
Philadelphia Pattern, P. S. & W... dis 50&10 %
Carriage and Tire, R. B. & W... old list dis 50&5 %
Plow, R. B. & W... dis 30 %
Stove, R. B. & W... dis 10 %
" Shelton Co. Shaved Heads... dis 15 %
Union Nut Co., old list... dis 50&15 %
Machine... dis 30&10 %

Borax.—In cases of 100 lbs... ₩ ℔ 19c
In barrels... ₩ ℔ 18c

Boring Machines.
Kellogg's... dis 15 %
Snell Mfg. Co., Rice's Patent... dis 15 %
" " Regular... dis 15 %
Douglas Mfg. Co... dis 20 %
Morticing Machines each... $18 00

Bow Pins... dis 45 @ 50 %

Braces.
Barber's Patent... dis 40 %
Wilson Mfg. Co... net
Spofford's Patent... dis 40 %
Noble's Patent... dis 40 %
Bartholomew's American Ball... dis 10&10 %
" Patent Grip... dis 40 %
O. S. Backus & Co... dis 30&10 %
Ives' Novelty... dis 40 %
Empire... dis 30&10

Bung Hole Borers.
Common and Ring... dis 25 %
Enterprise Mfg. Co... dis 20&10 %
Ives' Tap Borers... dis 25 %

Butchers' Cleavers.
Bradley's... dis 15 %
Beatty's... new list dis 10 %

2	3	4	5	6	7	8	9
$19·00	$21·50	$24·00	$27·00	$30·00	$33·50	$36·50	$40·00

Hart Mfg. Co... dis 45&10 %

0	1	2	3	4	5	6
$25·25	$29·75	$30·25	$33·75	$43·55	$48·50	$54·00

Butts.
Wrought Brass... new list dis 25 %
Cast Fast Joint, Narrow... dis 40 %
" " Broad... dis 40 %
Cast Loose Joint... dis 50 %
" " Mayer... dis 40 %
" " Parliament... dis 40 %
Loose Pin... dis 40&10 %
Wrought Fast Joint, Narrow... dis 30 @ 20&7½ %
Wrought Broad... dis 35&7½ %
" Loose Joint... dis 35&7½ %
Wrought Table and Back Flaps... dis 30&7½ %
Cast Butts, Ohio Butt Co.—
Narrow Fast, Drilled and Wire Jointed (old list)... dis 35 %
Broad Fast, Drilled and Wire Jointed... dis 35 %
Broad, Loose, Drilled and Wire Jointed... dis 45 %
Silver Tipped... dis 45 %
Loose Joint, Japanned... dis 25 %
Loose Joint, Acorn and Silver Tipped... dis 40 %
Palmer Blind Butts... dis 30&10 %
Nicholson Blind Butts... dis 40&10 %
Parker's Blind Butts... dis 40&10 %
A. S. Parker's... dis 40&10 %
Clark's Surface Blind Hinges. Nos. 1, 3 and 5... dis 40&10 %
" " " No. 20... dis 50&10 %
" Mortise " "... dis 30&5 %
Seymour's... dis 40&10 %
Shepard's... dis 40&10 %
Garretson's... dis 40&10 %
The American Spiral Spring Butt Co... dis 20 %
Standard... dis 40&10 %
Union Mfg. Co.-
Drilled and Wired Cast Fast... dis 35 %
" " " Loose... dis 45 %
Loose Joint Japanned or Silvered Acorn... dis 40 %
" " Figured Enameled... dis 25 %
" " Nickel Capped... dis 30 %
" " Solid Bronze... dis 10 %

Caps—Percussion, per 1000.
G. D... 40c
Ely's E. B... 1-4s, 58c.; 1-10s, 65c., gold
" Double Waterproof, 1-4s, $1·45; 1-10s, $1·52½c., gold
Colt's... 1-10s, 70c., gold

Cartridges.
Metallic... dis 50 %

Cards.
Horse and Curry... dis 25&10 %
Cotton... new list dis 10&10 %
Wool... new list dis 10&10 %

Casters.
Iron and Wood Wheel Plate... new list dis 20&10 %
Brass Wheel Plate... new list dis 20&10 %
Porcelain Wheel Plate... new list dis 20&10 %

Chain.
English Coil, by the cask... net gold

₩ ℔	13½	10	9½	8½c	8½	8¼c
	3-16	¼	5-16	⅜	7-16	½

Trace, 6½-10-2... ₩ pair, gold, 62c
Trace, 7-10-2... ₩ pair, gold, 67c
Galvanized Pump Chain... ₩ ℔ 14c
German Halter Chain... new list, Jan. 1, dis 10 %
German Coil... new list, Jan. 1, dis 10 %
Jack Chain, Iron... dis 40&10 %
" Brass... dis 25&10 %

Chalk.
White... ₩ gross, 50c
Red... ₩ gross, 75c
Blue... ₩ gross, 90c
Crayons... ₩ gross, 14c

Cherry Stoners.
"Family"... ₩ doz $9·00

Chisels.
[illegible] Firmers... dis 50&10 @ 60&10 %
[illegible]... 60&10 %
Socket Framing... dis 60 %
Socket Corner... 60&10 %
[illegible] Firmers...

Butcher's... $5·50 to £ gold—new list
Newbould's... $5·50 to £ gold
Spear & Jackson's... $5·50 to £ gold—new list

Clips, Axle.
Norway or Best... dis 20&5 %
Superior... dis 40&10 %
"Star," Superior Philadelphia... dis 45&5 %

Coal Shovels.
Iron Handled... ₩ doz, $ 85 @ 1 25
Wooden Handled... ₩ doz, 1 00 @ 2 00

Coal Hods.

	No. 14	15	16	17	18	
Common Japanned	$9·00	9·75	10·50	12·00	13·50	per doz
" Galvanized	13·00	14·50	15·50	17·50	19·50	"

Common Japanned... dis 50&10 %
" Galvanized... dis 40&10 %

Cocks.
Brass Racking... dis 20&10 %
Lock and Globe... dis 20&10 %

Coffee Mills.
Board and Box... dis 15 %
Increase Wilson's... new list dis 10 %
Selsor's Pat... $9·50, $10·50—dis 20 %
French Steel... dis 15 %
"Champion"... dis 20 %
Swift's... dis 20 @ 25 %

Compasses and Dividers.
Bemis... dis 15&15 @ 20&5&15 %
Excelsior... dis 30 %
Peck Stow & Wilcox... dis 25 %

Coopers' Tools.
Bradley's... dis 15 @ 20 %
Chas. E. Little... dis 15 @ 20 %

Corn Knives and Cutters.
Bradley's... dis 10 %

Crucibles.
Gautier & Co... ₩ No. 5½c

Curry Combs.
Hotchkiss' and Kellogg's, Iron and Brass... dis 15 %
Fitch's... dis 20 %
Ruggles'... dis 15 @ 20 %
Rubber... ₩ doz, $9·00—dis 10 %
Schweitzer Mfg. Co... dis 20 %

Curtain Pins.
Silvered Glass... dis 40&10 %

Cutlery.
American Table...
American Pocket... dis 25 %

Door Springs.
Gray's... $7·50 per doz—dis 40&10 %
Torrey's Patent... $7·50 ₩ doz—dis 40 @ 40&10 %
Palmer's Japanned No. 6... ₩ doz $5·00
" Coppered "... " 6·00
" Silvered "... " 8·00
Challenge.—
Japanned... ₩ doz $4 00 @ 6 00
Bronzed... ₩ doz 5 00 @ 7 00
Nickel Plated... ₩ doz 6 50 @ 9 00
1 Gross lots... dis 10 %
5 Gross lots... dis 20 %

Drawing Knives.
... dis 60 @ 60&10 %
Bradley's... dis 25 %
Adjustable Handled... dis 10 %

Drills.
Ingersoll's Ratchet... dis 25 %
Moore's Triple Acting Ratchet... dis 20 %

Egg Beaters.
Monroe's... ₩ doz net $3·25 @ 3·50
Ashley's... ₩ doz net 2·25 @ 3·00
Earle's Patent... ₩ doz net 5·50 @ 6·00
Dover... ₩ doz net $6·00
National... ₩ doz $4·50—dis 10 %
Peerless... ₩ doz net $4·00

Emery.
Genuine Chester—Regular Nos... ₩ ℔ 8c } dis 5 @ 10 %
" Flour and F... ₩ ℔ 5c }
Washington Mills—Regular Nos... ₩ ℔ 8c
" Flour... ₩ ℔ 5c

Enameled and Tinned Ware.
Kettles... dis 20 %
Sauce Pans, Glue Pots, &c... dis 15 %

Faucets.
Cork Lined, Wood... dis 60 %
Fenn's... dis 50 %
" Cork Stops... dis 40 %
Star... dis 55&10 %
Frary's Patent Petroleum... dis 10&10 %
Taylor's Pattern "... dis 20&10 %
Wood and Metallic... dis 40 %

Files.
Nicholson... $5 00 to £ currency—dis 7½ %
Newbould's... 5 25 to £ gold
J. & Riley Carr's... 5 50 to £ gold
" " Rasps... 5 75 to £ gold
Stubs'... 8 50 to £ gold
Butcher's... 5 50 to £ gold
Spear & Jackson's... 5 50 to £ gold
Hargreaves, Smith & Co.'s... 5 00 to £ gold
Jowitt's... 5 25 to £ gold
"Western"... 5 00 to £ net
W. K. & C. Peace's "Imperial"... 5 25 to £ gold
R. Ibbotson... 5 00 to £ gold
Beam & Murray, "Cyclops"... 4 85 to £ gold
Fisher's... 4 75 to £ gold
Goodlad's... 4 00 to £ gold
Moss & Gamble... 5 25 @ 5 50 to £ gold

Fluting Machines.
Acme... $7 00 each net
Manville, No. 2... 7 00 each net
Knox, with 4-inch Rolls... 5 00 each net
" " 6 " "... 6 00 each net
O. K... 6 50 each net
Peerless, 4-inch Rolls... 4 00 each net
" 5 " "... 5 00 each net
Excelsior, No. 1... 4 75 each net
" No. 2... 6 50 each net
Diamond... 7 50 each net
Climax 7-inch Rolls... 8 00 each net
" 4½ "... 6 50 each net
Empire... 4 00 each net
Eureka, No. 1, 7-inch Roll... 8 00 each net
" No. 2, 5-inch Roll... 6 00 each net
K. F. M., 4½-inch Roll... 5 50 each net
" 6-inch Roll... 6 00 each net
Myers' Fashion Fluter, 4½-inch Rolls... 8 00 each net
" Convex Brass Fluter, Sad Iron attachment... $1·75
Domestic Fluter... $1·75 each net
Fairy, Self-Heater... 10 00 each net
National, 5-inch Rolls... 5 00 each net
Ponton Fluter, Bright... $1 50—dis 25 %
" " Galvanized... 2 00—dis 25 %
Geneva Hand Fluter... $1 35 each net

Fry Pans.—P. S. & W.
Tinned... dis 25 %

₩ doz	$3·00	3·25	3·62	4·00	4·50	5·00	5·50	6·00	7·50
No.	0	1	2	3	4	5	6	7	8

Smith, Burns & Co., "Excelsior" Polished... dis 20 %

₩ doz	$3·70	4·00	4·70	5·30	6·00	7·00	8·00	9·00
No.	1	2	3		5	6	7	8

Hammers.
Emmet Hammer Co... dis 10 %
Maydole's... new list net
Cheney's... new list net
Verree... dis 5 %
Yerks & Plumb... new advanced list dis 5 @ 10 %
Minot & Co... dis 15 %

Handles.
Hammer and Hatchet... dis 10 %
Quakertown, Axe, Pick and Sledge... dis 10 %
" Hammer and Hatchet... net
Greensboro', Axe, Pick, Hammer, &c... dis 10 %
Woolworth Axe, Pick and Sledge... dis 10 %

Harness Snaps.
Judd's... dis 40 %
Fitch's... dis 30 %
Hotchkiss'... dis 10 %
Andrews'... dis 25 %
Hull's, Japanned... dis 40&10 %
" Tinned... dis 33⅓&10 %

Hatchets.
Isaiah Blood... dis 10 %

	Nos.				
Shingling,	Nos. 1 2 3	₩ doz	$7 50	8 00	8 50
Claw,	" 1 2 3	₩ doz	8 50	9 00	9 50
Lathing,	" 1 2 3	₩ doz	7 50	8 00	8 50

Hunt's... net

Shingling,	Nos. 1 2 3	₩ doz	$7 25	8 00	8 75
Claw,	" 1 2 3	₩ doz	7 75	8 50	9 25
Lathing,	" 1 2 3	₩ doz	7 50	8 25	9 00

Hurd's... dis 20 %

Shingling,	Nos. 1 2 3	₩ doz	$8 00	8 50	9 00
Claw,	" 1 2 3	₩ doz	9 00	9 50	10 00
Lathing,	" 1 2 3	₩ doz	8 00	8 50	9 00

Newark's Edge Tool Co.'s... dis 25 %

Shingling,	Nos. 1 2 3	₩ doz	$6 50	7 00	7 50
Claw,	" 1 2 3	₩ doz	7 25	7 75	8 25
Lathing,	" 1 2 3	₩ doz	6 50	7 00	7 50

Yerks & Plumb... dis 10 %

Shingling,	Nos. 1 2 3	₩ doz	$7 00	7 50	8 00
Claw,	" 1 2 3	₩ doz	7 50	8 00	8 50
Lathing,	" 1 2 3	₩ doz	7 00	7 50	8 00

Simmon's... dis 10 %

Shingling,	Nos. 0 1 2 3	₩ doz	$7 50	8 00	8 50	9 00
Claw,	" 1 2 3	₩ doz		9 00	9 50	10 00
Lathing,	" 1 2 3	₩ doz		8 00	8 50	9 00
Broad,	" 1 2 3	₩ doz		9 00	10 00	12 00
"	" 4 5 6	₩ doz		14 00	16 00	18 00
"	" 7 8	₩ doz		20 00	22 00	

Elephant... dis 20 %

Shingling,	Nos. 1 2 3	₩ doz	$8 00	8 50	9 00
Claw,	" 1 2 3	₩ doz	9 00	9 50	10 00
Lathing,	" 1 2 3	₩ doz	8 00	8 50	9 00

J. P. Verree & Co... dis 5 %

Shingling,	Nos. 1 2 3	₩ doz	$7 00	7 50	8 00
Claw,	" 1 2 3	₩ doz	7 50	8 00	8 50
Lathing,	" 1 2 3	₩ doz	7 00	7 50	8 00

Underhill's... dis 10 %

Shingling,	Nos. 1 2 3	₩ doz	7 25	8 00	8 75
Claw,	" 1 2 3	₩ doz	7 75	8 50	9 25
Lathing,	" 1 2	₩ doz	11 00	12 00	

Hinges.
Wrought Strap and T... dis 30&7½ %
Providence Plate. { 6 and 8 in. list 11c. / over 8 in. list 9½c. } dis 10&5 @ 10&10 %
Screw Hook and Strap... { 8, 10, 12 in. 8c / 14 to 36 in. 6½c } ...net
Heavy Welded Hook... { 8 to 12 in.. 9c / 14 in & up, 8½c } dis 10 %
Screw Hook and Eye... { ⅜ to 1 in., 9½c / ⅝ in. 10½c / ½ in. 12½c } ...net

Hoes.
Solid Shank, C. S... ₩ doz $8 00—dis 20 @ 25 %
Socket... ₩ doz 9 00—dis 20 @ 25 %
Riveted Eye... ₩ doz 5 00—dis 20 @ 25 %
Grub... dis 20 %
Planters'—Winsted... add 10 %
Scovill... add 33⅓ %
Scovill Pattern (Winsted)... add 20 %

Hooks.
Belt... dis 50 %
Bench—Hotchkiss' $5 00 ₩ doz... dis 10 %
Wardrobe, Japanned... new list dis 10&10 %
Hat and Coat "... new list dis 15&10 %

Wrought Staples and Hooks and Staples... dis 60&10 %
Screw Hooks and Eyes, revised list... dis 65&10 %

Horse Nails.
Putnam's.

No.	5	6	7	8	9	10
	22c	27c	26c	25c	24c	23c

In lots 2000 lbs. dis. 5 %.
Ausable

No.	5	6	7	8	9	10
	30c	7c	25c	24c	23c	22c

In lots of 1000 lbs. 5 % discount.
Brundage.

No.	5	6	7	8	9	10
	29c	26c	24c	23c	22c	21c

In lots of 500 lbs., dis. 5 %.
American Pressed.

No.	5	6	7	8	9	10
	22c	20c	20c	20c	20c	20c

In lots of 1000 lbs. dis 5 %.
Perkins Finished (ready to drive).

No.	5	6	7	8	9	10
	31c	28c	26c	25c	24c	23c

In lots of 1000 lbs. dis 5 %.
Buffalo Forged.

No.		6	7	8	9	10
		28c	26c	25c	24c	23c

Globe (Pointed and Polished).

No.	5	6	7	8	9	10
	31c	28c	26c	25c	24c	23c

In lots of 1000 lbs., 5 % discount.
National (Pointed and Polished), Extra Finish.

No.	5	6	7	8	9	10
	30c	27c	25c	24c	23c	22c

In lots of 1000 lbs., dis 5 %.
Vulcan (Blued, pointed, ready to drive).

No.	5	6	7	8	9	10
	33c	30c	28c	27c	26c	25c

In lots of 500 lbs., 5 % discount.
" 1000 lbs 7½ % discount.
New London Horse Nails.

No.	6	7	8	9	10
Great Western	27c	25c	24c	23c	22c
U B	29c	27c	26c	25c	24c

In lots of 1000 lbs., dis 5 %.
Star Brand... ₩ ℔ 16c
Morgan... 14c

Horse Shoes.
Burden... ₩ keg, $6 35
Shoenberger... ₩ keg, 6 35
R. I. Horse Shoe Co., Perkins Pattern... ₩ keg, 6 35
" " R. I. Pattern... ₩ keg, 6 85
Mule Shoes... ₩ keg, 7 35

Kettles.
Enameled... dis 15 %
Brass... ₩ ℔ 55c net
In lots of 500 ℔s... ₩ ℔ 50c net

Knives.
Ames' Butcher Knives... dis 20 %
" Shoe "... dis 15 %
Hay and Straw, "Wadsworth's"... dis 20 %

Knobs.
Base—Common... net
" Plush Tip... dis 10 %
" Elastic End... reduced list dis 10&10 %
Trenton Lock Co... dis 40 %

Lanterns.
Brady's Patent... dis 10 %
Ætna... dis 10 %
Yankee... dis 10 %
De Beque... dis 10 %

Locks and Latches.
Cabinet—Eagle... dis 25 %
Cabinet—Gaylord... dis 25 %
Trunk... dis 20 %
Continental... dis 15 %
Shepardson's... dis 20 %
Trenton Lock Co... dis 20 %
Branford... dis 20 %
Norwich... dis 20 %
Russell & Erwin... dis 20 %
Norwalk... dis 20 %
Nashua... dis 20 %
Mallory, Wheeler & Co... dis 35&2 %

Meat Cutters.
Dixon's (P. S. & W.)... dis 10 %

No.	1	2	3	4
₩ doz	$14 00	$17 00	$19 00	$30 00

Hales'... dis 25 %

No.	11	12	13
₩ doz	$27 00	$33 00	$42 00

Miles Challenge... dis 20 %

No.	1	2	3
₩ doz	$22·00	$30·00	$40·00

Perry's Champion (P. S. & W.)... dis 10 %

No.	200	300	400
₩ doz	$22 00	$27 00	$40 00

Woodruff's (P. S. & W.)... dis 10 %

No.	100	150
₩ doz	$15 00	$18 00

American... dis 25 @ 25&5 %

No.	1	2	2½	3	4	5
Each	$6 00	$9 00	$14 00	$15 00	$30 00	$75 00

Molasses Gates.
Stebbins' Pattern... dis 60&10 %
Tinned ends... dis 40&10 %
Weed's Patent Self-Boring... dis 40 @ 50 %
" without Auger Bit...
Patent Self-Measuring... per doz $42 00—dis 20 %

Mouse Traps.
Wood Choker... ₩ doz holes, 16 @ 18c

Nails.—See Trade Report.

Nuts and Washers.
Nuts... large, 4½c; small, 6c off list.
Washers... large, 5c; small, 7c off list.

Oil Stones.
Washita No. 1... ₩ ℔ 22c
" Slips... ₩ ℔ 44c
Hindostan... ₩ ℔ 6c dis 10 %
" Slips... ₩ ℔ 10c dis 10 %

Oilers.
Olmsted's... dis 25&10 %
Broughton's... dis 25&5 %
Common Zinc, Brass and Copper... dis 25 %

Picks.

Washoe R. R... dis 25 %... Nos.	1	2	3	4	5
₩ doz...	$14·00	15·00	16·00	17·00	18·00
Washoe Coal, dis 20 %...	$8·50	9·00	10·00	11·00	13·00	15·00

Picture Nails and Knobs.
Richards' Patent... dis 40 @ 40&10 %

Planes.
Chapin's, 1st quality... dis 30 %
Sandusky Tool Co., 1st quality... dis 30 %
" " 2d " (Ogontz)... dis 40 %
Ohio Tool Co., 1st quality... dis 30 %
" " 2d quality (Sciota)... dis 40 %
Owasco Tool Co., 1st quality... dis 30 %
" " 2d quality... dis 40 %
Howland's, 1st quality... dis 30 %
Plane Irons, Butcher's... $5 50 to £ gold—new list
" Chapin's... dis 10&10 %
" Ohio Tool Co... dis 10 %
" Spear & Jackson's... 5 50 to £ gold—new list
" Sandusky Tool Co... dis 10 %

Plumbs and Levels
Chapin's... dis 60&10 %
Standard Rule Co.'s New Adjustable... dis 50&10 %

Pumps.
Douglas Cistern, etc... new list dis 25 %
" S. & F... new list dis 20 %

Rakes.
Cast Steel... dis 25 %

$8 00	9 00	10 00	11 00
8	10	12	14 teeth.

Razor Straps.
Genuine Emerson... dis 25 %
" " in 5 gross lots... dis 30 %
Hunt's... dis 25&10 %
Chapman... dis 10 @ 15 %

Rivets.
Iron and Tinned... dis 25 %
Copper Rivets and Burrs... new list dis 10 %

Rods.
Stair... new list dis 30 %
American Patent... dis 30 %

Rope.
Manufacturers' List
Manila... ½ inch and larger ₩ ℔ 16½c
" ... ⅜ inch ₩ ℔ 17 c
" ... ¼ and 5-16 inch ₩ ℔ 17½c
" Lath Yarn... ₩ ℔ 16 c
" Hay Rope... ₩ ℔ 17 c
Sisal... ½ inch and larger ₩ ℔ 14½c
" ... ⅜ inch ₩ ℔ 15 c
" ... ¼ and 5-16 inch ₩ ℔ 15½c
" Hay Rope... ₩ ℔ 15 c

Rules.
Chapin's Boxwood... dis 60&10 %
" Ivory... dis 50&10 %
Hubbard & Curtiss Mfg. Co... new list net
Stanley Rule and Level Co.'s Ivory... dis 50&10 %
" " Boxwood... dis 60&10 %
Standard Rule Co.'s Boxwood... dis 60&10 %
" " Ivory... dis 50&10 %

Sad Irons.
... ₩ ℔ 4½c net
Sad Iron, Nickel Stand attached... ₩ ℔ 9c

Sand Paper—dis 7½ @ 10 %
Beader & Adamson's (Flint) 00 to 1½... $4 25 ₩ ream
" " 2, 2½ & 3... 4 75 "
Assorted... 4 25 "
Star... ₩ ream $3 25
Emery... ₩ ream $6 50 @ 11 50
Cowdin Mfg. Co... dis 7½ @ 10 %
Diamond Flint, 00 to 1½... per ream $4 25
" " 2, 2½, 3 and assorted... " 4 75
" Emery Paper... per ream $6 50 to $11 50

Sash Locks.
Clark's... dis 20 %
Ferguson's... dis 20 @ 25 %
Norwich... dis 15 %

Sash Weights.
Solid Eyes... ₩ ℔ 2½c

Sausage Fillers.
Perry's (P. S. & W.)... dis 10 %

No.	1	0
₩ doz	$15 00	$21 00

Saw Rods... dis 10 %

Saws.
Spear & Jackson's... $4 50 to £ gold
John Spear... $3 60 to £ gold
Am. Saw Co... new list
Perforated Cross Cuts, all kinds... 68c ₩ foot
Inserted Tooth... dis 10 %
All else... dis 12½ %
Disston's... dis 12½ %
H. W. Peace's Circulars... dis 10 %
Other kinds... dis 10 %
Wm. McNiece's Hand, Cross Cut and Circular... new list dis 10 %
E. M. Boynton's Lightning... dis 35 %
" Others... dis 15 %

Scales.
Brown's... dis 25&5 %
Fairbanks'... new list dis 15 @ 20 %
Howe's... dis 15&5 %

Shattuck's Counter and Union... dis 15 %
National Platform... dis 25 %
Eureka... dis 25 %
Scale Beams... dis 25 %
No. 1 300 to 1200 lbs... 90c ₩ cwt
No. 2 " "... 75c ₩ cwt

Screws.
American list of Jan. 1, 1874.
Flat Head Iron... dis 52½ %
Round Head Iron... dis 52½ %
Flat Head Brass... dis 50 %
Round Head Brass... dis 50 %
Round Head Silver Capped... new list dis 20 %
Hand Rail... dis 10 %
Coach or Lag... dis 25 %
Coach, Patent Gimlet Point... dis 5 %
Bed... list net
English—Flat Head Iron...

Scythes.
Blood's German Steel, Grass... ₩ doz $9 00
" Cast " "... ₩ doz 10 00
" Silver " "... ₩ doz 11 00
" German " Grain... ₩ doz 13 00
" Cast " "... ₩ doz 14 00
" Red Rover... 12 00
" Young America... 9 50
" Silver Clipper... 12 63
Scythe Snaths... dis 20 %

Shears.
Cast Steel... dis 60&10 %
Conn. Cutlery Co., new brand... dis 60 %
Rowe's... dis 50&10 %

Shovels and Spades.
Ames... new list dis 12½ %
Rowland... new list Feb. 8, '73, dis 20 %
Old Colony... new list dis 10&5 %
N. B. Sherman... old list dis 7½ %

Shovels and Tongs.
Iron Head... list net
Brass Head... dis 5 %
Polished Steel... new list dis 15 %

Slates.
Square Frames, Round Cornered, by case... dis 60&10 %
Less than a case... dis 50 @ 55 %
Oval Frames, by case... dis 40 @ 40&10 %
Less than a case... dis 30 %

Spoons.
Iron... new advanced list, dis 10 %
By the case... dis 20 %
Britannia... dis 40@40&10 %
Plated A 1... revised list dis 30&5 %
German Silver... revised list dis 15&5 %
Tinned (P. S. & W.)—
Teas... $1·50 ₩ gross, net
Tables... 2·75 " net

Stocks and Dies.
... dis 15 %

Stove Polish.
Gem... ₩ gross $5 00, dis 10 %
Joseph Dixon's... ₩ gross, 6 00
National... ₩ gross $4 75
Gold Medal... ₩ gross $6 00, dis 15 %

Squares.
Steel... dis 50 %; full cases, dis 50&10 %
Iron... dis 50 %; full cases, dis 50&10 %
Nickel Plated... add $2 50 @ $4 00 ₩ doz net
Try Squares and T Bevels... dis 45&10 %
Star Try Squares and Bevels... dis 30 %

Tacks.
Full Weight American Iron... dis 40&7½ %
Half Weight American Iron... dis 70&7½ %
Carpet... dis 7½ %
Brads American Half Weight... dis 50&7½ %

Finishing Nails	½	⅝	¾	1	1½ in. and over
₩ ℔	25c	20c	18c	14c	13c dis 7½ %
Trunk and Clout	½	⅝	¾	1	1½ in. and over
₩ ℔	25c	20c	18c	14c	13c dis 7½ %

Copper Tacks... ₩ ℔ 50c—dis 7½ %
Iron Shoe Nails, ₩ ℔ 4-8 and longer, 10c; 3½-8, 10½c... dis 7½ %
Double Pointed... new list dis 33⅓ %

Tapes, Measuring.
American Flask and Cap Co... dis 20 %
Eddy's... dis 20 %

Toe Calks.
... ₩ ℔ 13c net

Tobacco Cutters.
Champion... dis 20 %
Peck, Stow & Wilcox... dis 10 %

Tinners' Tools and Machines.
P. S. & W... list net

Traps.
Newhouse... dis 20 %
Hotchkiss... dis 20&10 %
Peck, Stow & Wilcox... dis 30 %
Blake's Patent... dis 15 @ 20 %

Vises.
Trenton Vises, Solid Box.
30 to 160 lbs... 15c
160 and over... 18c
Peter Wright's... ₩ ℔ 15½c. gold
Wilson's Solid Box... dis 15 %
30 to 160 lbs... 18c
160 and upward... 22c
Backus & Union, Parallel... dis 25 %
Buffalo, Parallel... new list dis 15 %
Fisher & Norris' Double Screw Parallel... dis 15 @ 15&5 %
Trenton Parallel... dis 25 %

Wire.
Bright and Annealed... Nos 0 @ 18 dis 35 @ 40 %
" " ... " 19 @ 26 dis 45 @ 47½ %
" " ... " 27 @ 36 dis 50 @ 52½ %
Coppered... " 0 @ 18 dis 25 @ 30 %
Galvanized, Nos. 0 to 12... dis 35 @ 40 %
Galvanized, Nos. 13 to 18... dis 40 @ 45
Tinned... dis 15 @ 20 %
Cast Steel... 5 @ 10 %
Tinned Broom Wire... dis 30 @ 35 %
Galvanized Telegraph, Nos. 8 and 9... ₩ ℔ 10c @ 11c
" " 10 and 11... ₩ ℔ 11c @ 12c
" " 12... ₩ ℔ 11½c @ 12½c
Annealed Fence, Nos. 8 and 9... dis 35 @ 40 %
" Grape, " 10 to 14... dis 35 @ 40 %
Fence Staples... ₩ ℔ 8½ @ 9 %
Stubs' Steel Wire... $7 00 to ℔ gold

Wrenches.
American Adjustable... dis 45 %
Baxter's Adjustable "S"... dis 25 %
" Diagonal... dis 20 %
Collins & Co.'s... dis 40 %
Coes Genuine... dis 40 %
" Pattern (Wrought)... dis 50 %
" " (Malleable)... dis 50&10 %
Lindsay's Patent... dis 25 %
Taft's Pattern... dis 65&10 %
Davis' Patent Duplex... new list dis 25 %

TIN WARE AND TRIMMINGS.

STAMPED TIN WARE.

Basins.
Wash Basins, Handled, Plain Stamped... dis 25 %

Inch	10	11	11½
Per doz	$3·50	4·00	4·50

Wash Basins, Handled, Retinned... dis 25 %

Inch	10	11	11½
Per doz	$4·00	4·50	5·00

Wash Basins, with Feet, Plain Stamped... dis 25 %

Inch	10	11	11½	13½
Per doz	$2·00	2·50	2·93	3·75

Wash Basins, with Feet, Retinned... dis 25 %

Inch	10	11	11½	13½
Per doz	$3·00	3·50	4·00	5·00

Wash Basins, Stamped... dis 25 %

Inch	10	10½	11½
Per doz	$1·70	2·10	2·50
Inch Shallow		10	11
Per doz		$1·55	1·90

Wash Basins, Retinned... dis 25 %

Inch	10	10½	11½
Per doz	$2·50	3·00	3·50
Inch Shallow		10	11
Per doz		$2·00	2·60

Covers.
Bucket... dis 10 %

	1 pt.	1 qt.	2	3	4	6	8	10	12 qt.
Per gross	$2·25	3·00	4·00	4·50	5·25	7·75	8·75	9·25	12·00

Coffee Pot... dis 10 %

	3 pt.	2 qt.	3	4	6 qt.
Per gross	$1·25	1·50	1·75	2·25	3·50

Pot... dis 10 %

Inch	7½	7¾	8¼	8¾	9¼	9¾	10¼
Per gross	$5·50	6·00	6·75	7·25	8·00	8·50	10·25

Inch	10¾	11¼	11¾	12¼	13¼
Per gross	$11·00	11·75	12·50	15·50	19·00

Tea Kettle Breasts and Covers... dis 10 %

Inch	5½	6½	7½	8	8½	9
Per gross	$6·00	6·50	8·00	9·00	9·75	10·50

Inch	9½	10	10½	11	11½	12½	13½
Per gross	$11·25	13·00	14·00	15·00	16·00	21·00	24·00

Dipper Bowls, Plain Stamped... dis 25 %

Pints	½	¾	1	1½	Quarts	1	2	2½
Per doz.	·50	·60	·70	·80	Per doz.	·90	1·25	1·50

Dipper Bowls, Retinned... dis 25 %

Pints	½	¾	1	1½	Quarts	1	2	2½
Per doz.	·75	·95	1·00	1·15	Per doz.	1·30	1·55	1·90

Pans.
Dish Pans, Tinned... dis 25 %

Quarts	7	8	10	14	17	21	30
Per doz	8·50	9·50	11·00	13·00	16·00	19·00	30·00

Milk Pans, Plain Stamped... dis 25 %

Quarts	½	1	1½	2	3	4	5	6	8	10
Per doz	$ ·85	1·05	1·30	1·45	1·65	2·40	2·90	3·15	4·40	5·00

Milk Pans, Retinned... dis 25 %

Quarts	½	1	1½	2	3	4	5	6	8	10
Per doz	$1·15	1·40	1·60	1·90	2·15	3·00	3·40	3·80	5·20	6·00

Pie Plates... dis 10 %

Inch	6	7	8	9	10	11
Per gross	$4·50	5·00	7·25	7·75	10·50	12·00

JAPANNED TIN WARE.

Cannisters, Common... dis 10 %

Pound	¼	1	2	3
Per doz	$1·10	1·60	2·50	3·25

Cannisters, Hinged... dis 10 %

Pound	1	2	3	4	6
Per doz	$1·75	2·75	3·40	3·75	4·50

Candlesticks, Japanned... dis 10 %

No	1	2
Per gross	$6·00	7·00

Cake Boxes, Round... per nest, $3·25, dis 10 %
" Square... per nest, 4·25, dis 10 %
Chamber Pails, Japanned (Smith, Burns & Co.)... dis 10 %

Nos	2	3	4	5
Green, per doz	$8·00	9·00	10·50	12·50
Oak "	$9·50	10·50	12·00	13·50

Dust Pans, Corrugated... per gross, $22·00, dis 10 %
Box Graters... per gross, $4·00, dis 10 %
Molasses Cups... dis 10 %

Pint	½	1	2
Per doz	$1·25	1·50	2·75

Pepper Boxes Japanned... dis 10 %
Per gross... Small, $3·00; Large, $4·00

Toy Banks, House... dis 10 %

No	1	2
Per gross	$7·00	5·50

Toy Banks Gothic... dis 10 %

No	1
Per gross	$5·50

Toy Cups, Straight... dis 10 %

No	1	2	3
Per gross	$4·00	3·50	3·50

Toy Cups, Flaring, nests of (3)... per gross, $2·50, dis 10 %
Toy Pails, Covered... dis 10 %

No	1
Per gross	$4·50

Toy Rattles... per gross, $2·25, dis 10 %
Trunks, Wire Handled... per nest (5) $1·50, dis 10 %
Spittoons, Tin... per gross, No. 2, $30, No. 3, $27, dis 10 %

PLANISHED TIN WARE.

Planished Coffee Pots, Round... dis 20 %

Each	·60	·75	·85	·95	1·15	1·25	1·30	1·40
Pints	1	2	3	4	5	6	7	8

Planished Tea Pots, Round... dis 20 %

Each	·70	·80	·95	1·05	1·25
Pints	2	3	4	5	6

Planished Tea Pots, Oval... dis 20 %

Each	·70	·80	·90	1·05	1·15	1·40	1·75
Pints	1	2	3	4	5	6	8

Tea Pot Handles—P. S. & W... dis 20 %
Stow's Patent Hollow Tea Pot Handles.
No. 1, Small 4½ inches... per gross, $11·50
No. 2, Medium, 5½ "... " 12·50
No. 3, Large, 6½ "... " 13·50
No. 4, Ex. Large, 7½ in., for Wash Pitchers, &c... " 18·00
Stow's Patent. New Pattern.
No. 25, Small, 4½ inches... per gross, $11·50
No. 35, Medium, 5½ "... " 12·00
No. 45, Large, 6½ "... " 13·00
Solid Iron, Tin Tipped.
No. 10, Small, 4½ inches... per gross, $9·00
No. 15, Medium, 5½ "... " 9·50
No. 20, Large, 6½ "... " 10·75
Stow's Patent Hollow Tea Pot Handles, Adamantine Bronze—P. S. & W.
No. 12, Bronzed and Tin-Tipped... per gross, $13·50
Saucepan Handles, Of Best Malleable Iron.
P. S. & W... dis 20 %
Japanned.
No. 1, 5½ inches long... per gross, $3·50
No. 2, 6 "... " 3·75
No. 3, 6½ "... " 4·00
No. 4, 7½ "... " 4·25
No. 5, 8 "... " 4·50
No. 6, 9 "... " 4·75
Tinned.
No. 1, 5½ inches long... per gross, $4·25
No. 2, 6 "... " 4·50
No. 3, 6½ "... " 4·75
No. 4, 7½ "... " 5·25
No. 5, 8 "... " 5·50
No. 6, 9 "... " 5·75
Japanned... per lb., ·16
Tinned... " ·20

METALS.

IRON.—Duty: Bars, 1 to 1½ cents per lb., Sheet, Band, Hoop and Scroll, 1½ to 1½ cents per lb. Provided, that none of the above Iron shall pay a less rate of duty than 35 per cent. Pig, $7 per ton; Polished Sheets, 3 cents per lb.; Wrought Scrap, $8 per ton; Cast Scrap, $6 per ton. All subject to a reduction of 10 per cent. Railroad, 70 cents per 100 lbs. Boiler and Plate, 1½ cents per lb.

Pig Iron—American.
Foundry No. 1... ₩ ton, $35 00 @ 36 00
Foundry No. 2... " 32 00 @ 33 00
Gray Forge... at works " 27 00 @ 29 00
White and Mottled... at works " 24 00

SCOTCH.
Gartsherrie... " 47 00 @ 48 00
Coltness... " 45 00 @
Glengarnock... " 42 00 @
Eglinton... " 41 00 @

Bar Iron.
Am. Refined, at mill... ₩ ℔ 3 @ 3½c

Rails.
Welsh, gold... ₩ ton, 55 00 @ 60 00
American, at works, currency... " 60 00 @ 65 00
Old Rails, currency... " 40 00 @ 41 00

Scrap.
Wrought Scrap, from yard... " 42 00 @ 45 00

Bar Iron from Store.
Common Iron.
¼ to 2 in. round and square... ₩ ton, $ 72 50
⅝x9-16 in " "... " 77 50
½ in. "... " 80 00
2¼ to 3 in. "... " 77 50
1 to 6 in. wide x ⅜ and 1 in. thick... " 72 50
1¼ to 6 in wide x ¼ & 5-16 in. thick... " 77 50
1 and 1¼ in. x ¼ and 5-16... " 85 00
Swedish Iron.
1½x⅜ and ½... " 175 00
1½x⅜ to ⅝, and ¾ square... " 170 00
1½ to 5x⅝ to ¾ and ¾ to 2-in. square... " 165 00
6 to 9x⅜ and ½... " 175 00
Refined Iron.
⅜ to 2 in. round and square... " 75 00
1 to 6 in. wide x ⅜ to 1 thick... " 75 00
1¼ to 6 in wide x ¼ and 5-16 thick... " 80 00
1 and 1¼ x ¼ and 5-16... " 80 00
Large Rounds.
2¼ to 2¾, round and square... " 80 00
3, 3¼ and 3½ in... " 85 00
3¾ and 4 in... " 92 50
Rods—⅝ and 11-16, round and square... " 77 50
½ and 9-16, " "... " 80 00
7-16, " "... " 85 00
⅜, " "... " 90 00
5-16, " "... " 95 00
¼, " "... " 100 00
3-16, " "... " 127 50
Band Iron.
1 to 6 in. x 3-16 to No. 12... " 92 50
Horse Shoe Iron.
⅝ and ¾ x ⅜, to ½... " } 110 00
1 x ⅜, to ½... " }
Ovals, Half Ovals and Half Rounds.
¾ to 1½... ₩ ton, $100 00
⅝ and 11-16... " 105 00
½ and 9-16... " 110 00
7-16... "
⅜... "
Nail Rods
Best Norway... ₩ ℔ 9c
Norway Shapes
¼ to 2 in. x ¼ to ⅜... " } 8½c
¼ to ¾ square... " }
Norway Bar
¾ to 2 in. square...
Spring Steel
1 to 4 in. wide... " 8c
Tire Steel
¾ to 1½ x ¼ and 5-16... " 8½c
¾ & 1 x 3-16... " } 9½c
¾ & 1 x ⅛... " }
Toe Calk Steel
⅜ to ⅝ x ⅜ to ½... " 7½c
Plow Steel
6 to 16 wide... " 9c
Sleigh Shoe Steel
¾ to 1½ x ⅜ to ⅝... 6½c
Hoops, ⅝ x No. 22... ₩ ton $155 00
" ¾ x No. 20... " 130 00
" ⅞ x No. 19... " 125 00
" 1 and 1⅛ x No. 18... " 115 00
" 1¼ to 2 and 1x1⅛ x No. 13 and 14... " 105 00
Scroll Iron—½ x 12... " 132 50
" ½ x 10... " 122 50
" ½ x 3-16... " 127 50
" ½ x ¼... " 122 50
" ⅝ x 14... " 132 50
" ⅝ x 12... " 120 00
" ⅝ x 10... " 117 50
" ⅝ x 3-16... " 115 00
" ⅝ x ¼... " 112 50
" ¾ x 12... " 115 00
" ¾ x 10... " 112 50
" ¾ x 3-16... " 110 00
" ¾ x ¼... " 107 50
" ⅞ x 14... "
" ⅞ x 12... " 110 00
" ⅞ x 10... " 107 50
" ⅞ x 3-16... " 105 00
" ⅞ x ¼... " 102 50
" ⅞ x 14... " 120 00

Sheet Iron.

		Common English.	R. G. American.
Nos. 10 to 20	₩ ℔	5¼c	6¼c
21 to 24	"	5½c	6¾c
25 to 26	"	5¾c	7c
27	"	6c	7¼c
28	"	6¼c	7½c
30	"	7¼c	

Galvanized, 10 to 20, prime... ₩ ℔ 11c
" 21 to 24... " 12c
" 25 to 26... " 13c
" 27... " 14c
Patent Polished... " 15c
Russia, Nos. 8 to 11... ₩ ℔ 20c
" Nos. 12 to 16... " 20c
" Stained, No. 1... " 19c
Belgian...

One piece Corrugated Sheet Iron Elbows:

CHARCOAL IRON

4½	5	5½	6	7 inch.
$3·75	4·25	5·25	5·25	6·50 per doz.

RUSSIA IRON.

4½	5	5½	6	7 inch.
$8·00	10·00	13·00	13·00	14·00 per doz.

Adjustable Stove Pipe Elbows.

CHARCOAL IRON.

4	4½	5	5½	6	7 inch.
$3·25	3·75	4·25	4·75	5·25	6·25 per doz.

RUSSIA IRON.

4	4½	5	5½	6	7 inch.
$7·00	8·00	9·50	10·75	11·75	13·75 per doz.

Discount on orders of 10 doz. 5 %.
" " " 25 doz. 10 %.

Brass,
ROLLED AND IN SHEETS.
(Brown & Sharp's Gauge.*)
For the purchase of 100 pounds and over at one time

HIGH BRASS.

All Nos. to No. 28, and widths 14 in. and under.....36c
All Nos. to No. 28, inclusive, and widths over 14 to 20 in. inclusive.....39c
Over 20 in. to 30 in. inclusive.....42c
½c ₩ ℔ advance on each No. above No. 28 to 38, inclusive.
All Brass thinner than No. 36 is Platers' Brass at.....55c
Sheets 24x48 in., and all sheets cut to particular sizes and lengths.....43c
Printers' Rules.....46c
Sheets wider than 30 in. and under 40 in.....46c
" 40 in. and over.....48c
Circular sheets, in diam. from 4 in. to 14 inclusive....46c
" " " over 14 in. to 20 " 49c
" " " " 20 in. to 30 " 52c
" " " " 30 in. to 40 " 55c
" " " " 40 in.....58c

LOW BRASS.

4c ₩ ℔ an High Brass.
Gilding als, 7c ₩ ℔ more than High Brass.
Platers' or Gold Metal { ½ in Bars.....48c
{ Sawed.....51c

FOR SLITTING: Metal in Width.

2 in. to ¼ in., to No. 30, inclusive, 1c ₩ ℔ advance.
2 in. to 1 in., thinner than No. 30, 2c ₩ ℔ advance.
2 in. to ¼ in., " " 30, 3c " "
¼ in. and less to No. 30, 2c ₩ ℔ advance.
¼ in. and less thinner than No. 30, 5c ₩ ℔ advance.
10 % discount.

SCRAP—NEW METAL.

High Brass Scrap, 18 cents, net.
Low " 20 " "
Gilding, 22 cents, net.
Turnings, Filings and Chips, half the price of Scrap net.

BRASS AND COPPER WIRE.
(Stub's Wire Gauge).

	High Brass.	Low Brass.	Gild'g and Cop'r
Nos. 0 to 20	39	43	49
Nos. 21, 22, 23	40	44	50
Nos. 24 and 25	41	45	51

Brass Wire straightened and cut, 4 cents advance
10 % discount.

FINE WIRE—NET PRICES.

	High Brass.	Low Brass.	Gild'g and Cop'r.
No. 26	0·41	0·45	0·51
No. 27	0·44	0·48	0·54
No. 28	0·46	0·50	0·56
No. 29	0·48	0·52	0·58
No. 30	0·50	0·54	0·62
No. 31	0·52	0·56	0·66
No. 32	0·56	0·60	0·71
No. 33	0·60	0·64	0·81
No. 34	0·64	0·68	0·91
No. 35	0·69	0·73	1·03
No. 36	0·78	0·82	1·15
No. 37	0·98	0·98	1·28
No. 38	1·28	1·28	1·58

Ten cents per pound extra for Spooling.

TUBING.
(Brown & Sharpe's Gauge.)

	₩ ℔
Plain to No. 20, inclusive	80·54
Nos. 21, 22, 23, 3c. advance on List for each No.	
Nos. 24, 25, 26, 4c. " "	
Above No. 26 special rates.	
Plain Tube, 1-4 inch	70
" 3-16 "	1 55
" 1-8 "	1 80

All Mandrel-Drawn Tubes 5c. advance on List.
Fancy Tubing 4c. advance on List above Plain.
English, Scotch, and Extra Patterns Fancy Tubing to No. 20 63
Tubing sawed or cut 2 to 4 ft. long, 2c. advance on List.
Add to two cents a half-cent for each additional cutting under two feet. 10 % discount.
BRASS DOOR RAIL Polished—54 cents per lb.—10 %

BELT AND HOSE COPPER RIVETS AND BURS.

Price per ℔	49	50	53	54	56	58	60	64	68c
Nos	7	8	9	10	11	12	13	14	15

Braziers Rivets, 43 cents per pound discount 10 %.

GERMAN SILVER MARKET METAL AND WIRE.

	Market Metal.	Wire
4 per cent. 12 inch. to No. 26	0·75	0·90
6 " " "	0·85	1·00
10 " " "	1·05	1·25
15 " " "	1·30	1·55
18 " " "	1·45	1·75
20 " " "	1·55	

Discount 10 %.
German Silver Sheets over 12 inches wide and weighing more than 10 lbs.....$2·10 ₩ ℔ net
Advance two cents for each additional inch in width above 12 inches, and two cents per pound on each No. thinner than Nos. 26 to 36, inclusive.
All German Silver thinner than No. 36 is Platers' at 50 cents per pound additional.
German Silver Scrap, one-third less than net price of 12 inch Market Metal; German Silver Turnings, Filings and Chips, half the price of Scrap.
* Brown & Sharp's Gauge is about two numbers finer than Stubs' Wire Gauge.

COPPER—DUTY: Pig, Bar and Ingot, 5c.; old copper, 4 cents ₩ ℔; Manufactured (including all articles of which copper is a component of chief value) 45 % ad valorem. All subject to a reduction of 10 per cent.

American Ingot	₩ ℔ 26 @ 26½c
English	"

SHEATHING, BRAZIERS COPPER, BOLTS, &c.

Braziers Copper, ordinary sizes, over 16 oz., per square foot	35c ₩ ℔
Braziers' Copper, ordinary sizes, 16 oz. and over 12 oz., per square foot	38c. "
Braziers Copper, 12 oz. per square foot and lighter	41c. "
Circles less than 8 inch in diameter	38c. "
Circles, 8 inch diameter and over	41c. "
Segment and Pattern Sheets	38c. "
Locomotive Fire Box Sheets	35c. "
Sheathing Copper, over 12 oz. per sq. ft.	33c. "
" " 12 oz. ₩ sq. ft. and lighter	41c. "
Bolt Copper	35c. "

No Copper in Sheathing except 14x48 inches, and not to exceed 34 oz. to the square foot.

TINNING.

14x48, by the case	8c. ₩ sheet
14x48, less than case	10c. "
Boiler Sizes, 7 and 8 inch	12c. "
" 9 inch	15c. "
Other sizes not larger than 30x60	2½c. ₩ sq.
Larger than 30x60	5c. "
Copper Bottoms, 35c. ₩ ℔	net

O'NEILL'S PATENT PLANISHED COPPER.
14x48.

14 and 16 oz. and heavier	39c. By the case, 38c. ₩ ℔
12 oz. and lighter	42c. " " 41c. "

Boiler Sizes.
7 in., 14x52. 8 in., 14x56. 9 in., 14x60
14 and 16 oz. and heavier.....41c. By the case, 40c. ₩ ℔
(And all sizes not over 20 inches wide.)
30x60

14 and 16 oz. and heavier	43c. ₩ ℔
12 oz. "	46c. "

LEAD—DUTY: Pig, $2 per 100 lbs.; old Lead, 1½ cent per lb.; Pipe and Sheet, 2½ cents per lb. All subject to a reduction of 10 per cent.

Spanish	6¼ @ 6½c gold
German Refined	6¾ @ 6¾c gold
English	@ 7¼c gold
Bar	dis 10 % 9¾c.
Pipe	dis 10 % 10½c.
Tin Lined Pipe	dis 10 % 10½c.
Sheet	dis 10 % 10½c.
Shot	dis 10 % Drop, 11¼c.; Buck, 12¼c.

Solder No. 1, 18c. @ 19c. No. 2, 17c. @ 17½c.

STEEL—DUTY: Bars, Ingots, Sheets and Coils, valued at 7 cents per lb., or under, 2¼ cents; over 7 cents, and not above 11, 3 cents per lb.; over 11, 3¾ cents per lb. and 10 % ad val. Railway Bars 1¼ cents per lb. Railway Bars, in part Steel, 1 cent per lb. All subject to a reduction of 10 per cent. Provided, that Metal cemented, cast or made from Iron by the Bessemer or pneumatic process, of whatever form or description, shall be classed as Steel.

American Cast Steel.

Tool	16c
Spring	12½c
Homogeneous	12½c
Tire	12¼ @ 13½c
Machinery (round and square)	11¼ @ 12c
File	12½c
Sheet	14 @ 16c
Saw Plate, mill and muley	14 @ 16½c
Saw Plate, gang and X cut	13 @ 14c
circular as to size	18 @ 30c

Chrome Steel.

Tool	₩ ℔ 20 @ 21c
Tool, extra fine	" 40 @ 75c
Spring	₩ ℔ 12c and upward
Machinery	₩ ℔ 14c.
Hammer	" 15c.
Gun or Homogeneous	" 16c.

English Steel,—payable in gold, dis 5 % cash.

Best Cast	₩ ℔ 18c
Extra Cast	" 19c
Round Machinery, Cast	" 11½c
Swaged, Cast	" 18c
Best Double Shear	" 18c
Blister, 1st quality	" 13½c
" 2d quality	" 11½c
" 3d quality	" 10½c
German Steel, Best	" 11½c
do 2d quality	" 10½c
Shoet Cast Steel, 1st quality	" 18c
" " 2d quality	" 16c
" " 3d quality	" 14c
File Steel, Flat and ¼ Round	" 12½c
" Square and Round	" 13c
" Mill	" 13½c
" Taper to 4 inch	" 17c
" Taper 3 and 3¼ inch	" 18c

SPELTER—DUTY: In Pigs, Bars and Plates, $1 20 per 100 lbs.—less 10 per cent.

Silesian, cash	7¼ @ 7¾c, gold
American "	8 @ 11c., currency

TIN—DUTY: Plates, Sheets, Tagger and Terne, 15 per cent. ad val.; Electro-galvanized Plates, 2 cents per ℔; Manufactures of, not enumerated, 35 per cent. ad val. —all subject to a reduction of 10 per cent. Bars, Block and Pigs, free. Bancs, subject to duty of 10 per cent.

Banca	₩ ℔ 34c., gold
Straits	₩ ℔ 30c., gold
English	₩ ℔ 28c., gold

CHARCOAL TIN PLATE.

I C 10x14, Prime Charcoal	12·00
12x12, "	12·50
14x20, "	12·75
I X 10x14, "	14·25
12x12, "	14·75
14x20, "	15·25
For each additional X add	2·25

COKE TIN PLATE.

	Best.	2d Quality.	Ordinary.
C 10x14	$11·50	10·50	9·50 @ 10·00
12x12	12·00	11·25	
14x20	12·25	11·25	

TERNE PLATE.

	Prime Char.	2d qual.	Coke.
4x20	$11·00	10·50 @ 10·75	9·00 @ 10·00
14x20	12·25		

ZINC.—DUTY: Pig or Block, $1 50 per 100 lbs. Sheet, 2½c. ₩ ℔. All subject to a reduction of 10 per cent.

Sheet	cask 9½c
"	open 10c

Paper Stock, Old Metals, &c.

(*Dealers' Selling Prices.*)

Canvas linen	5¼ @ 5½
" cotton, No. 1	6 @ 6½
" " No. 2	3 @ 3¼
White linen rags, No. 1	6½ @
" " No. 2	4¾ @ 5
Colored	2½ @
Mixed woolens	2 @ 3
Soft woolens	6 @ 6½
Gunny bagging	1¾ @ 2
Jute Butts	2¾ @ 2¾
Kentucky bagging	3½ @ 3¾
Book stock	4 @ 4½
Waste paper and scraps	1½ @ 3
Rope cuttings	2½ @ 3
Kentucky Bale rope	4 @ 4½
Oakum junk, No. 1	5 @ 5½
" No. 2	3¾ @ 4
Grass rope	3¼ @ 3¾
Tarred Shaking	1½ @

Old Metal.

Copper	22 @ 23
Yellow metal	16 @ 17
Brass	14 @ 15
Heavy Composition	21 @ 23
Old lead, solid	6¼ @ 6½
Tea lead	5½
Wrought iron	1¼ @ 1½
Sheet iron	0¾ @
Cast iron	1 @ 1¼
Machinery iron	1¼ @ 1½
Zinc	5½
Pewter, No. 1	23 @ 25
" No. 2	10 @ 12
Spelter	7

New Price List of Iron and Wood Screws.

¼ *Inch.*			1 *Inch.*			2¼ *inch.*	
No. 0,	·34	No.	11,	1·05	No.	15,	2·78
1,	·34		12,	1·13		16,	3·10
2,	·34		13,	1·26		17.	3·31
5/16 *Inch.*			14,	1·39		18,	3·60
No. 1,	·34		15,	1·58		20,	4·12
2,	·34		16,	1·79		22,	5·04
3,	·34		17,	1·97		24,	6·56
4,	·34		18,	2·21	2½ *Inch.*		
5,	·42		20,	3·05	No.	12,	2·34
6,	·49	1¼ *Inch.*				13,	2·55
7,	·80	No.	7,	·92		14,	2·78
8,	·68		8,	1·00		15,	3·10
⅛ *Inch.*			9,	1·05		16,	3·31
No. 2,	·34		10,	1·13		17,	3·60
3,	·34		11,	1·21		18,	3·83
4,	·34		12,	1·31		20,	4·44
5,	·42		13,	1·44		22,	5·51
6,	·49		14,	1·60		24,	6·83
7,	·60		15,	1·84	2¾ *Inch.*		
8,	·68		16,	2·10	No.	18,	2·78
9,	·76		17,	2·26		14,	3·07
10,	·81		18,	2·47		15,	3·31
5/16 *Inch.*			20,	3·07		16,	3·60
No. 2,	·36	1½ *Inch.*				17,	4·07
3,	·36	No.	8,	1·13		18,	4·38
4,	·38		9,	1·18		20,	5·25
5,	·46		10,	1·23		22,	6·46
6,	·56		11,	1·34		24,	7·74
7,	·65		12,	1·44	3 *Inch.*		
8,	·76		13,	1·60	No.	14,	3·31
9,	·81		14,	1·84		15,	3·60
10,	·87		15,	2·07		16,	4·07
11,	·92		16,	2·31		17,	4·54
12,	·97		17,	2·55		18,	5·04
¾ *Inch.*			18,	2·76		20,	5·99
No. 4,	·40		20,	3·31		22,	7·35
5,	·50	1¾ *Inch.*				24,	8·93
6,	·60	No.	9,	1·37		26,	9·98
7,	·70		10,	1·42	3½ *Inch.*		
8,	·79		11,	1·50	No.	16,	4·94
9,	·84		12,	1·65		17,	5·49
10,	·89		13,	1·84		18,	6·14
11,	·95		14,	2·07		20,	7·53
12,	1·00		15,	2·31		22,	8·74
13,	1·16		16,	2·55		24,	9·69
14,	1·26		17,	2·78		26,	10·63
15,	1·47		18,	3·07	4 *Inch.*		
16,	1·68		20,	3·52	No.	18,	7·25
⅜ *Inch.*			22,	4·07		20,	9·08
No. 5,	·54		24,	4·86		22,	10·24
6,	·63	2 *Inch.*				24,	11·29
7,	·72	No.	10,	1·50		26,	12·60
8,	·81		11,	1·63	4½ *Inch.*		
9,	·87		12,	1·86	No.	18,	8·40
10,	·92		13,	2·07		20,	10·13
11,	1·00		14,	2·31		22,	11·29
12,	1·08		15,	2·55		24,	12·60
13,	1·21		16,	2·78		26,	14·18
14,	1·31		17,	3·07	5 *Inch.*		
15,	1·52		18,	3·31	No.	20,	11·81
16,	1·71		20,	3·83		22,	13·13
1 *Inch.*			22,	4·44		24,	14·18
No. 5,	·61		24,	5·91		26,	15·75
6,	·70	2¼ *Inch.*			6 *Inch.*		
7,	·80	No.	11,	1·86	No.	24,	17·72
8,	·87		12,	2·10		26,	20·34
9,	·92		13,	2·34		28,	23·76
10,	·97		14,	2·55		30,	27·56

Paints, Oils, etc.

Paints.

Black, lamp—Coach Painters	₩ ℔ 20c
" Ordinary	6c
" Ivory Drop, fair	15c
" " best	26c
Black Paint, in oil kegs, 8c.; asst'd cans, 11 c	
Blue, Prussian, fair to best	50 @ 75c
" " in oil	35 @ 65c
" Chinese, dry	83c
" Ultamarine	25 @ 30c
Brown, Spanish	1¼c
" Van Dyke	9c
Carmine, 40	$12 00
Green, Chrome	15 @ 23c
" in oil	18 @ 25c
" Paris good, 30c; best, 40c	
" " in oil " 30c; " 45c	
Mineral Paints	1¾ @ 4c
Orange Mineral	14½c
Red Lead, American	9¼c
" " English	10¼c
" Venetian (N. C.) dry	2¾ c
" in oil asst'd cans, 11c; kegs, 8½c	
" Indian, dry	10c
Rose Pink	18c
Sienna, American, Raw	4c
" Burnt	4½c
" in oil	16 @ 20c
" Raw "	15 @ 25c
Umber, Burnt	4 @ 8c
" " in oil	16 @ 21c
" Raw	3½ @ 7½c
" " in oil	16 @ 22c
Vermillion, Chinese	$1 62
" English	1 52
" Trieste	1 45
" American, Common	23c
White Lead, American, pure dry	10½c
" " in oil	11 c
White, Paris, English, prime in bbls.	2½ @ 2¾c
Yellow Ochre French	2½ @ 2¾c
" in oil asst'd cans, 11c; kegs, 8½c	
" Vermont in casks	1½c
" Chrome	17 @ 21c
" in oil	18 @ 23c
Zinc White, American No. 1 dry	9c
" " No. 1, in oil	11c
" French (Paris)	11 c
" " in oil	12 c

Oils.

Linseed Raw ₩ gal. casks, 87c. bbls. 88c.	
" Boiled " 93c. " 96c.	
Whale, Crude	"
" Bleached Winter	"
Sperm, Crude	" 1·50
" Winter unbleached	" 1·70
" Bleached	" 1·75
Seal, Extra Refined	"
Lard, Pure Winter	" 92c
" Spring	"
Cotton Seed, Crude	" 42½c
" Southern Yellow	46½c @ 47½c
" White	"
Neatsfoot, Winter	70c @ $1·10
Natural Lubricating	38c @ 40c

Sundries.

Asphaltum	9c
Benzine	₩ gal. 16c
Chalk	1½c
" Block	"
Dryer, Patent, Am'n asst'd cans, 10½c.; kegs, 9c	
" " English " 11c.; " 9c	
Flocks	50c
Frostings	50c
Glue, White	38 @ 47c
" Sheet	20c
Glaziers' Points, Zinc	9c
Gum, Copal	38c
" Damar	25c
" Shellac, English	60c
" " dark	56c
Litharge	10c
Pumice Stone, selected Lumps	4 @ 6c
" powdered	4c
Putty in bladders	3½c
" in bulk	3c
Rotton Stone, soft, English	8c
Spirits Turpentine	44c
Whiting, Spanish	1c

Glass.

French Window—1st, 2d, 3d, and 4th qualities. Per box of 50 feet.

SINGLE.

SIZES.	I.	II.	III.	IV.
6 x 8 to 7 x 9	$8·00	$7·00	$6·75	$6·00
8 x 10 to 10 x 14	8·50	8·00	7·25	6·50
10 x 15 to 12 x 16	9·00	8·50	8·00	6·75
13 x 16 to 16 x 20	9·50	9·00	8·50	7·75
15 x 22 to 15 x 30	11·75	10·50	10·00	8·00
16 x 30 to 22 x 30	14·25	12·25	11·00	9·50
15 x 38 to 22 x 36	15·00	13·50	12·00	
24 x 36 to 24 x 40	15·75	14·25	12·50	
28 x 38 to 28 x 42	16·25	14·75	13·25	
28 x 44 to 28 x 50	17·25	15·75	14·25	
30 x 50 to 30 x 54	20·50	17·00	15·50	
32 x 54 to 34 x 56	21·50	19·25	17·50	
34 x 58 to 34 x 60	23·00	21·50	20·25	
36 x 60 to 40 x 60	26·50	24·25	23·00	

DOUBLE.

SIZES.	I.	II.	III.	IV.
6 x 8 to 7 x 9	$13·00	$12·00	$11·50	$10·00
8 x 10 to 10 x 14	14·00	12·75	12·00	10·75
10 x 15 to 12 x 16	15·00	14·00	13·25	11·25
13 x 16 to 16 x 20	16·00	15·00	14·00	12·50
15 x 22 to 15 x 30	20·00	17·50	16·50	13·25
16 x 30 to 22 x 30	22·00	19·25	17·75	15·00
15 x 38 to 22 x 36	23·75	20·50	19·25	
24 x 36 to 24 x 40	24·75	22·50	20·00	
28 x 38 to 28 x 42	26·00	23·50	21·00	
28 x 44 to 28 x 50	27·50	25·50	22·50	
30 x 50 to 30 x 54	31·00	26·50	24·00	
32 x 54 to 34 x 56	32·50	29·00	26·50	
34 x 58 to 34 x 60	34·50	32·00	31·00	
36 x 60 to 40 x 60	39·50	36·50	35·00	

Sizes above—$12·00 per box extra for every 5 inches.
Discount to the trade, 50&10 to 50, 10&5 per cent.
An additional 10 per cent. will be charged for all Glass more than 40 inches wide. All sizes above 52 inches in length, and not making more than 81 united inches, will be charged in the 84 united inches bracket.

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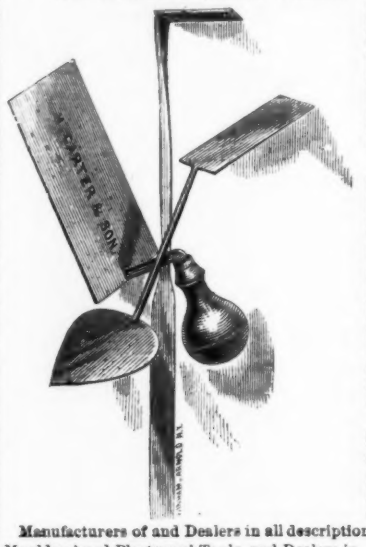
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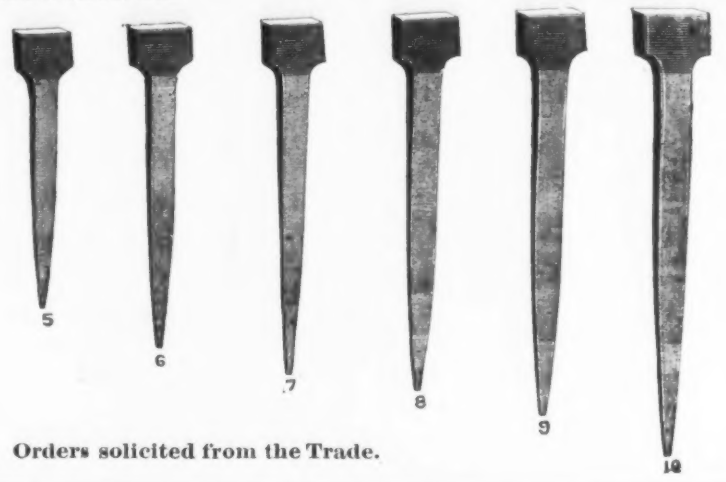

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Illustrated Catalogues of which will be furnished on application.
Numerous new designs and styles of goods are being prepared as rapidly as possible, and the **quality** these goods is being made equal to the **best in the market,** while their **prices are very favorable**

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These processes produce "*iron ordinary coke pig iron the purest iron ever made*," and which is equal to the highest class Swedish and Norwegian Iron for Cast Steel and tools, and to Low Moor Iron for engineering purposes, and at *less than one-half the cost* of those irons.

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This Laboratory was established in 1866, at the instance of a number of practical Iron-masters, expressly to afford prompt and reliable information upon the chemical composition of the substances above mentioned, for smelting and refining purposes. The object being to make it at once a convenient, practically useful, and comparatively inexpensive adjunct to the Furnace, Forge and Rolling Mill.

CHARGES TO IRON WORKS.

For determining the per cent. of pure Iron in an ordinary Ore	$4 00
For the per cent. of Pure Iron, Sulphur and Phosphorus in do	12 50
For each additional constituent of usual occurrence	1 50
For those of unusual occurrence or difficult to determine, the charge must necessarily depend upon circumstances.	
For determining the per cent. of Sulphur and Phosphorus in Iron or Steel	12
For each additional constituent of usual occurrence	4 0
For the per cent. of Carbonate of Lime, and Insoluble Silicious Matter in a Limestone	10 00
For each additional constituent	2 00
For the per cent. of Water, Volatile Combustible Matter, fixed Carbon, and Ash in Coal	12 50

For determining the constituents of a Clay, Slag, Coke, or of an Ash of Coal the charges will correspond with those for the constituents of an ore.
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Letter "B" Geared Counter Coffee or Spice Mill.

Stands nearly 2½ feet high. Is highly finished, colors deep Vermillion and Gold. We make more than 20 different styles and sizes.
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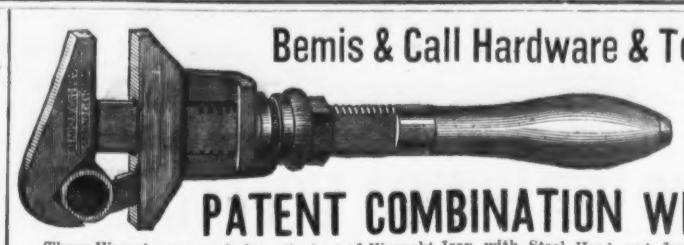

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This Wrench can be furnished with Briggs Pat. Nut or Sleeve.

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These Wrenches are made from the best of Wrought Iron, with Steel Head and Jaw, Case-Hardened throughout. And not only combine all of the superior qualities of our Cylinder or Gas Pipe Wrenches, but also all requisite Combinations of a regular Nut Wrench. Thus making a Combination which has no equal.
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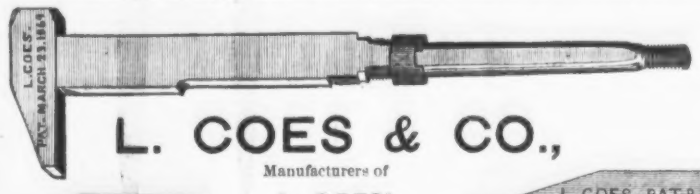

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Our Mr. L. Coes, formerly senior member of the firm of L. & A. G. Coes, established in 1839, is the Original Inventor of the Screw Wrench, and has, by making the bar *wider*, where the strain comes most severe, and screwing a nut up firmly against four *square* shoulders inside the ferrule, thereby *effectually* preventing the ferrule from being thrust back into the handle or getting loose, and making a larger screw than in the old wrench, fully succeeded in making a 12 inch wrench stronger than a 15 inch made in the usual manner. All sizes are made in this way, and are undoubtedly the strongest and best finished Screw Wrenches in the market.

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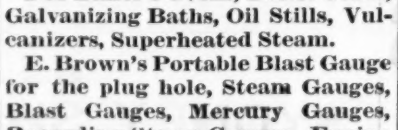

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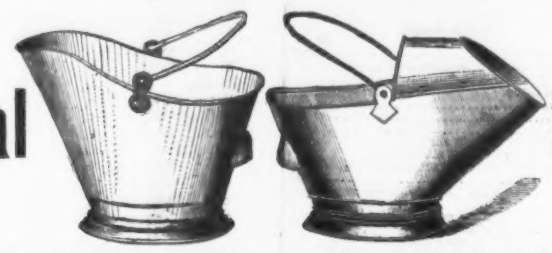
Coal  **Hods.**

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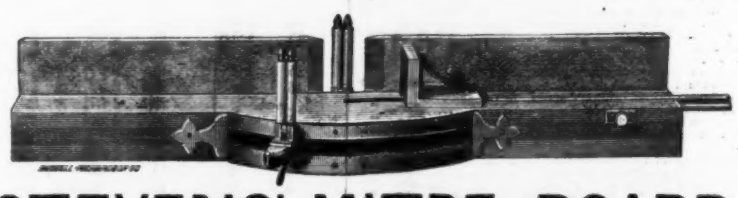

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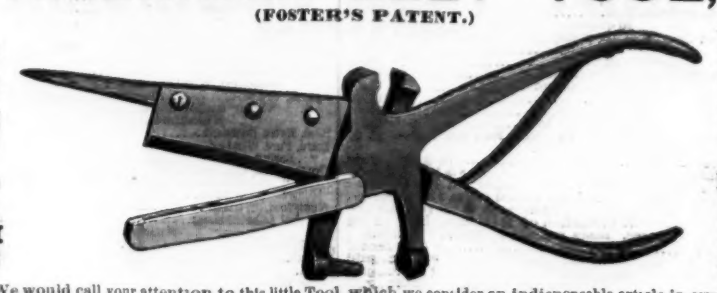

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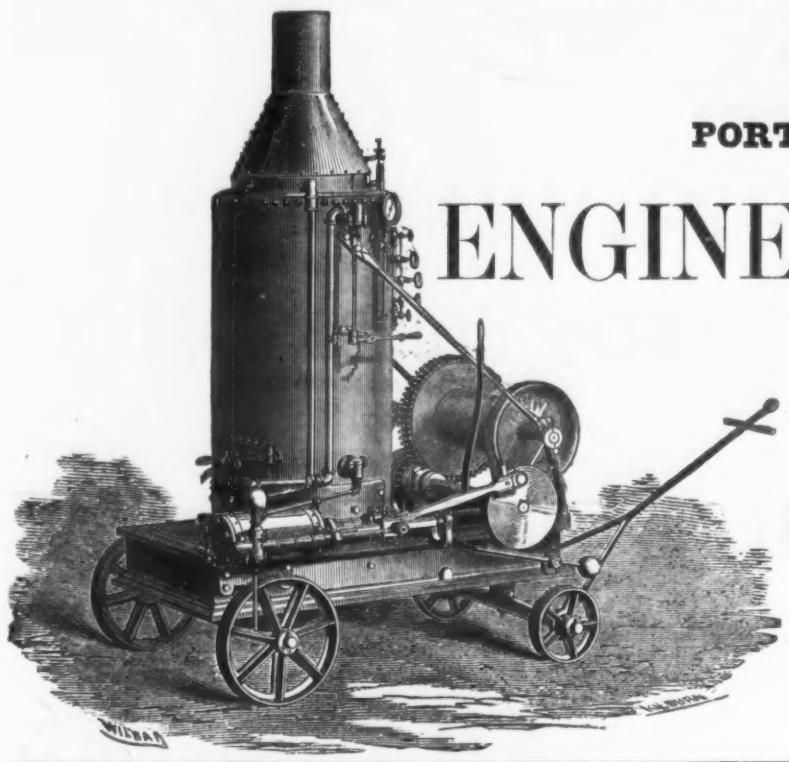

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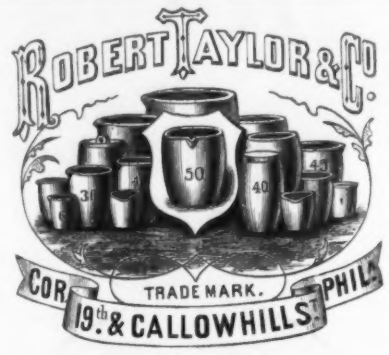

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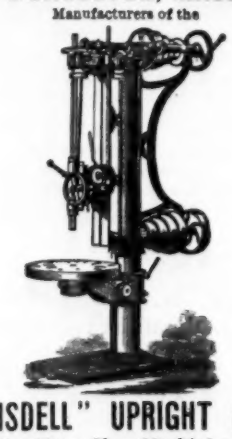

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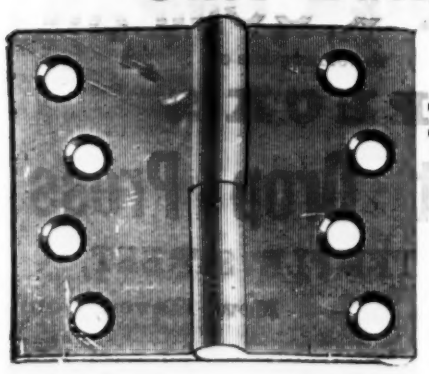

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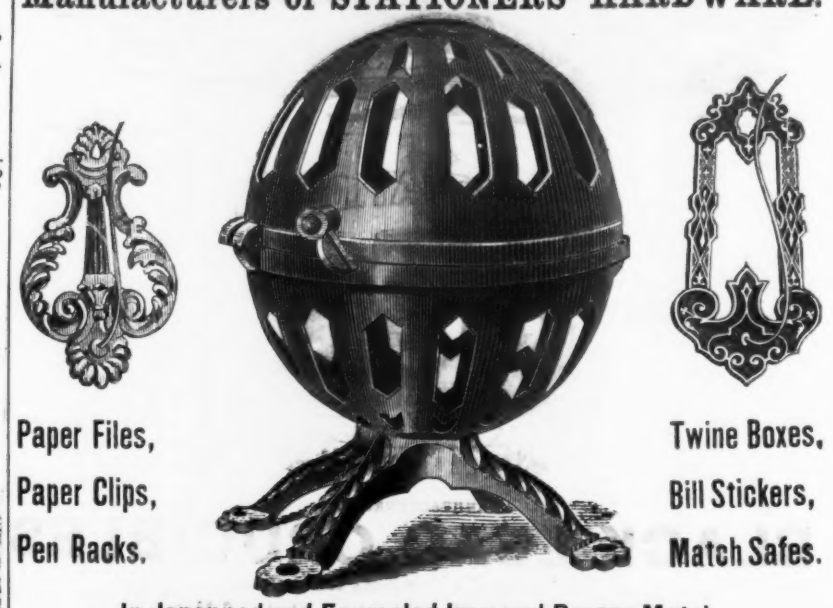

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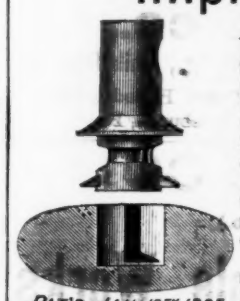

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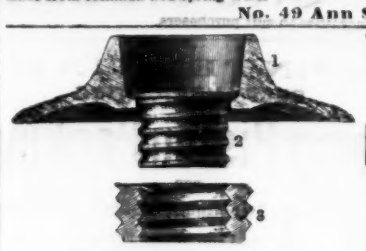

PATENT DOOR-KNOB ROSETTE.
No. 1, Rosette.
No. 2, Screw entering No. 3.
No. 3, Stationary bushing remaining firmly in door.

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BRASS AND IRON FOUNDERS.

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₰ ℔......	13½	10½	10	9½	9¼	9	8½c gold
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Tang "........ dis 40 @ 40&10 %
Beatty's Framing and Firmer........ dis 10 @ 15 %
Casters.—Porcelain Wheel........ dis 20&10 %
Iron........ dis 20&10 %
Brass........ dis 20&10 %
Clothes Wringers.—Universal........ per doz $72 00
Novelty........ " 72 00
Reliance........ " 72 00
Providence........ " 72 00
Orders for 5 dozen, discount $3 per dozen.
King Wringers (Iron Frame)........ per doz $68 00
Coffee Mills.—Common Box and Side........ dis 10 @ 15 %
Patent Box and Side........ dis 10 @ 15 %
Cutlery.—American Pocket (best)........ dis 25 %
Landers, Frary & Clark, J. Russell & Co. and Lamson & Goodnow Mfg. Co. Manufacturers' net prices.
Drawing Knives.—Hart Mfg. Co.'s ..dis 60 @ 60&10 %
Concave Adjustable Handle........ dis 10 %
Beatty........ dis 10 @ 15 %
Fry Pans.
Tinned........ dis 20 %

₰ doz..	$3·00	3·25	3·62	4·00	4·50	5·00	5·50	6·00	7·50
No....	0	1	2	3	4	5	6	7	8

Burnished

₰ doz..	$2·80	3·00	3·38	3·75	4·12	4·50	5·00	5·62	6·75
No....	0	1	2	3	4	5	6	7	8

Files.
Nicholson Mill Files.... new list, $5 00 to £ cur dis 10 %
" Bastard...... " 5 00 to £ cur dis 10 %
" Taper...... " 5 00 to £ cur dis 10 %
Butcher's Mill........ $5 75 to £ gold
" Bastard........ 5 50 to £ gold
" Taper........ 5 50 to £ gold
Moss & Gamble—Mill, Taper and Bastard........ 5 50 @ 5 25 to £ gold
Fluting Machines.
Royal, No. 1, 4½ inch Rollers........ list $6 00
" No. 2, 6 " " .... list 7 00
Hammers.
Yerkes & Plumb's........ dis 10 %
Hammond & Son's........ dis 5 %
Veree........ dis 5 %
Hatchets.
Beatty's........ dis 10 @ 15 %

Shingling and Half. ₰ doz...	$7·00	7·50	7·75	8·00
No......	1	2	3	

Yerkes & Plumb........ dis 10 %

Shingling and Half. ₰ doz...	$7·00	7·50	8·00	8·50
No......	1	2	3	4
Claw.... ₰ doz...	$7·50		8·00	8·50
No......	1		2	3

Hinges.—Strap and T........ dis 30&7½ %
Bonney's No. 1 Gate........ dis 25 %
" No. 2 and 3........ dis 35 %
Horse Nails.

	Nos. 6	7	8	9	10
Ausable	27	25	24	23	22
Globe	29	26	25	24	23
Brundage	26	24	23	22	21

	Nos. 5	6	7	8	9	10
Putnam	32	28	26	25	24	22

On Ausable, Globe and Brundage 1000 ℔ lots........ dis 5 %
Knobs.—Door (regular manufacture)........ dis 20 %
Porcelain and Mineral........ dis 20 %
Locks and Latches.—Rim and Mortise........ dis 20 %
Till and Cupboard........ dis 25 %
American Padlocks........ dis 40 %
Scandinavian Pad Locks.

₰ doz......	$10·50	10·50	12·00	12·00	15·00	15·00	dis 15 %
No......	9	9½	10	10½	11	11½	
₰ doz......	$18·00	18·00	22·00	22·00			dis 25 %
No......	12	12½	13	13½			

Trunk Locks........ dis 5 @ 10 %
Thumb and Roggens Latches........ net @ dis 10 %
Lanterns.—Square Candle and Oil........ dis 10 %
Globe for Oil........ dis 10 %
" " Kerosene........ dis 10 %
Tubular Lanterns........ dis 10 %
Mattocks.—Long and Short Cutter........ dis 25 %
Western Pattern........ dis 25 %
Pennsylvania Pattern........ dis 15 %
Molasses Gates.
Enterprise Mfg. Co.'s Measuring Faucets........ dis 20 %
Stebbins' Gates........ dis 60 @ 60&10 %
Lincoln's " .... dis 40 @ 40&10 %
Landers, Frary & Clark's Petroleum...dis 10 @ 10&10 %
Taylor's Petroleum Faucets........ dis 20 @ 20&10 %
Brass Liquor Cocks........ dis 20&10 %
Meat Cutters.—Dixon's........ dis 10 %
Woodruff........ dis 10 %
Stowe........ dis 10 %
Hale's........ dis 25 %
Stuffers........ dis 10 %
Planes.—Auburn Tool Co., "Bench"........ dis 30 %
Metallic Plane Co........ dis 25&5 %
Evans Pat. Circular........ net
Plane Irons.—American........ list net
Butcher's........ gold £, $5 50
Picks.—Philadelphia........ net
Pittsburgh........ net
Plumbs and Levels.
Stanley Rule and Level Co........ dis 50&10 %
Wm. Johnson, (Stanley List)........ dis 50&10 %
Rakes.—Cast Steel Garden........ dis 30 %
Malleable Garden........ dis 33⅓ %
Wood Head Iron Teeth........ dis 30 @ 40 %
Rules.—Stanley Rule and Level Co........ dis 60 @ 60&10 %
Steven's and Hubbard's........ dis 60 @ 60&10 %
Steelyards.—American Pattern........ dis 15 %

₰ doz......	$5·50	7·00	9·00	1·00	11·00	12·00
No......	50	100	150	200	250	300

English Pattern........ dis 15 %

₰ doz......	$7·00	8·67	10·67	12·67	14·67	16·67
No......	50	100	150	200	250	300

L. F. & C. Excelsior........ dis 10 %

₰ doz......	$9·00	10·00	12·00	15·00	18·00	21·00
No......	50	100	150	200	250	300

Scythes.—Golden Clipper, Damascus Blade, Boxed and Sharpened........ ₰ doz. $11·00 net
Clipper No. 10, Boxed and Sharpened........ ₰ doz $10·50
" " 5. " " .... 10·00
Common Scythes........ ₰ doz $7·00 @ 10·00
Squares.—Steel and Iron, new list........ dis 50 %
Saws.—Disston's Cross Cut........ dis 12½ %
Disston's Hand........ dis 12½ %
W. McNiece's H'd, Cross-Cut & Circ'r, new list..dis 15 %
Boynton's Lightning, new list........ dis 30 %
Shovels and Spades.
Rowland's Plain Back, list Feb. 1873........ dis 20&10 %
" Back Strap " .... dis 20&10 %
Oliver Ames & Sons........ new list dis 10&5 %
Brady Shovel Co........ dis 10&5 %
Sad Irons.—Reading (planed face)........ per lb. 4½c.
Coquanock (polished face)........ " 4½c.
Stone.—Arkansas Oil, No. 1........ ₰ ℔ $1·38
Turkey Oil, No. 1........ " 1·00
Washita Extra........ " 30c
" No. 1........ " 22c
" " 2........ " 18c
Hindostan 8 in........ " 5½c
" Axe........ " 7c
Screws.—Iron........ new list, Jan. 1st, 1874, dis 52½ %
Brass........ dis 52½ %

Spoons.—
Plated Spoons, Rogers Bros.'....new list dis 30 @ 30&5 %
Britannia Spoons........ dis 40 @ 40&5 %
German Silver........ new list dis 10 @ 15 %
" " Light........ new list dis 15&5 %
Lalance & Grosjean Iron........ dis 10 %
Springs.—Gray's Door........ dis 40 %
Torry's Door........ dis 40 %
Stocks and Dies........ dis 15 %
Stove Polish.—Gem........ ₰ gross, $5·00
Onyx........ " $5·00
Try Squares.—Winterbottom........ dis 10 @ 15 %
Stanley Rule and Level Co........ dis 40&10 %
Willis Thrall, No. 2........ dis 30&10 %
Disston's No. 2........ dis 40 %
Tacks, &c.—Half Weight Tacks........ dis 70 %
" by the case....dis 70&7½ %
Clout and Finishing Nails........ 7½ %
" " by the case........ dis 7½ %
Traps.—Genuine Oneida—Newhouse list........ dis 20 %
Imitation " " "........ dis 30 %
Vises.—Solid Box........ ₰ ℔ 17c
Wrenches.—Coes Genuine........ dis 30&10 @ 40 %
Coes Imitation Wrought Bar........ dis 45 @ 45&5 %
" " Malleable Bar........ dis 50 @ 50&5 %
" " (Kellogg) Malleable Bar.....dis 50 @ 1? %
Tafts Pattern........ 60&10 %
" Kellogg's........ dis 60&10&5 %
Philadelphia Tool Co.'s Pat. Duplex........ dis 25 %
" " " Improved Baxter........ dis 25 %
" " " Adjustable Fork........ dis 25 %
Wire.—No. 0 to 18........ dis 35 @ 37½ %
No. 19 to 26........ dis 40 @ 42½ %
No. 27 to 36........ dis 45 @ 47½ %
Coppered 0 to 12........ dis 15 @ 20 %
Tinned Broom Wire........ dis 20 %

BUFFALO.

Reported by Messrs. Sidney Shepard & Co.

Jan. 1, 1874.

Axes, Chopping—"Francis Axe Co.'........ $12 00 @ $14 00
Augers—C. S. Cut, French, Swift & Co........ dis 30&10 %
Bits, Auger—Pierce's........ dis 25 %
Snell Mfg. Co........ dis 20 %
Jennings........ dis 10 %
Bells, Cow—Yaw's Genuine........ dis 20 %
Bellows—Smiths'........ dis 20 %
Bolts—Carriage and Tire, Square Neck........ dis 70&10 %
Diamond Neck........ 70&10&10 %
Braces, Bit—Barber's........ dis 40 %
Spofford's Patent........ dis 40 %
Brads, Cut........ dis 50&7½ %
Boards—Stove, Brooks' Patent........ dis 30 %
Butts—Brass........ dis 20 %
Cast Loose Joint........ dis 50 %
" " Pin........ dis 45 %
" " " Japanned........ dis 45 %
" " " Silver Tipped........ dis 25 %
Wrought Narrow........ dis 30&5 %
" Broad, Loose Joint........ dis 35 %
" Table and Back Flaps........ dis 25&5 %
Wrought Butts, Loose Pin........ dis 35 %
Belting—Rubber........ dis 30 @ 35 %
Leather, new list........ dis 30 @ 30&5 %
Beaters, Egg, "Peerless"........ per doz $4·00
Brick—Bath (box of 2 doz) Best English........ $1·50
"Rutherford"........ $1·25
Bung Borers—"Enterprise"........ dis 20 %
Chalk—White, Carpenter's........ ₰ gross, 50c
Red, Carpenter's........ " 75c
Blue, " .... " 90c
Crayon School........ " 14c
Chisels—Firmer Socket........ dis 60&10 %
Framing Socket........ dis 60&10 %
Corner Socket Chisels........ dis 60&10 %
Slick's Carpenters'........ dis 60&10 %
Castings—Malleable........ ₰ ℔ 10½c
Cherry Seeders........ per doz $12 00

Elbows—Corrugated.......	5	5½	6	7	
Charcoal........	$4·25	5·25	5·25	6·50	dis 15 %
Russia........	10·00	13·00	13·00	14·00	

Files—Wheeler, Madden & Clemson's........ dis 45 %
Freezers, Ice Cream—"Champion"........ dis 33⅓ %
Gates—Molasses—
Patent Self-Measuring........ ₰ doz., $42 00; dis 20 %
Hinges—Window Blind—
Clark's No. 20........ dis 50&5 %
Shepard's Standard, and Clark's........ dis 40&10 %
Garretson's........ dis 40, 10&10 %
Wrought Strap and T........ dis 30&7½ %
Hods, Coal—Plain, Black and Galvanized........ dis 10 %
Funnel, Black and Galvanized........ dis 10 %
Fancy and Helmet........ dis 10 %
Palace Coal Vases........ net
Hammers—Maydole's........ net
Yerkes & Plumb's........ dis 5 @ 10 %
Hooks and Staples—Wrought........ dis 60&10 %
Hooks—Bolt........ dis 50 %
Hasps and Staples—Wrought........ dis 60&10 %
Sad Irons........ ₰ ℔ 4½c
Kettles—Brass........ ₰ ℔, 50 @ 55c
Enameled........ dis 25 %
Knives, Drawing—Oval No. 1........ dis 60&10 %
Razor Blade........ dis 50&10 %

Lanterns "Peerless,"....No.	1	5	10	
₰ doz	$26 00	$11 25	$18 75	dis 10 %
"Radiant"........ No	75	100	150	175
₰ doz	$13 13	$13 13	$22 50	$22 50 dis 20 %

Tubular........ $11 50
" with Guards........ 12 00
Machines—Apple Paring, "Reading."..$8·00 @ 8·50 ₰ doz
Mills, Coffee—Box and Slide, common........ dis 15 %
Box Union and Eagle........ dis 15 %
"Enterprise"........ dis 20 %
Nails—Cut, Chesapeake........ $4 00
Clout and Finishing........ dis 7½ %
Shoe........ dis 7½ %

Horse, Ausable........ No.	5	6	7	8	9	10
	30	27	25	24	23	22c

" " Finished & Pointed........ add 1c ₰ ℔
" " 1000 lbs........ dis 5 %

" Clinton........ No.	6	7	8	9	10
	22	20	19	18	17c

Packing—Rubber........ dis 30 @ 33⅓ %
Pencils, Slate—Soapstone........ 4 5 6 in.
30 40 50c, ₰ 100
Case lots........ dis 20 %
Paint—White Lead, U. S. Gov't........ ₰ ℔ 9 c
Rivets—Iron, Black and Tinned........ dis 20 @ 25 %
Copper........ dis 10 %
Rope—Manila, ½ inch and larger........ ₰ ℔ 15½c
Rules—Boxwood and Ivory, Stephens........ dis 50&10 %
Screws—"American Screw Co"—
Flat Head, Iron........ dis 52½ %
Flat Head, Brass........ dis 52½ %
Staples—Blind, Boardman's Pat., ½ & ⅝........ ₰ ℔ 37c
Skates—White's........ dis 25 %
Barney & Berry's—N. Y. Club Japanned Top........ $2 20
" " B. & B. Club Blued Top........ 2 85
" " B. & B. all Clamp Fastening,
B. & B. Rink, Nickel Plated........ 10 50
Straps, Skate—Russet and Black........ dis 25 %
Spoons, Iron Tinned........ dis 10 %
" by the case........ dis 20 %
Plated Rogers' A No. 1........ dis 30&5 %
Britannia........ dis 40 %
Squares—Steel and Iron........ new list 50 %
Shoes, Horse—H. Burden & Sons........ ₰ keg $6·50
Shovels & Spades—Shepard, Forsyth & Dennison..dis 20 %
Saws—Henry Disston & Sons........ dis 10 %
Scales—Buffalo Scale Works........ dis 25 %
Fairbanks........ dis 15 %
Shears—Seymour's........ dis 50@10 %
Traps, Steel—Newhouse........ dis 20 %
Tacks—Half Weight Am. Iron........ dis 67½&7½ %
Vises—Parallel, Buffalo........ dis 15 %
Wrenches—Coes' genuine........ dis 40 %
Coes' Imitation........ dis 50&10 %
Tafts' Pattern........ dis 65&10 %
Ware—French, Tinned and Iron.
Stamped and Japanned.
Cast Iron Hollow........ dis 25 %
Tin Plates.—Add for each X........ 2·50

10x14, IC. Charcoal...	$12·00	14x20 C. terne........	$11·50
12x12, " ...	12·25	20x28 C. "	24·50
12½x17, " ...	11·50	20x28 X. "	29·00
14x20, " ...	13·00		

Pig Tin—Straits........ 34c @ 35
Bar Tin........ 36c
Solder........ No. 1, 20 c; No. 2, 18 c
Sheet Zinc—
"Lasalle"........ 570 100 ℔ casks
10·50 $10·80 ₰ 100 ℔s
Sheets........ $10·5
Iron Wire—Bright and Annealed........ dis 30 %
Coppered........ dis 25 %
Tinned........ dis 15 %
Tinned Broom, { Nos. 20 21 22 / 20c 21c 21c } .... dis 20 %
Copper—Sheathing 14 @ 18 oz........ ₰ ℔ 38c
Planished........ ₰ ℔ 39 @ 41c
Bottoms........ ₰ ℔ 35c
Bolts........ ₰ ℔ 35c
Braziers' Sheets........ ₰ ℔ 37c
Sheet Iron.—
18 Common........ $5 30
24 Common........ 5 50
24 W. D. Wood & Co., Smooth Finish........ 6 75
Am. Russia........ A. 14c B. 13c
Gen. Russia, No. 1 stained........ 19c
" " clean........ 20c
Galvanized........ dis 25 %

PITTSBURGH.

Card Rates, 60 days.

Flat Bar.—	1½ & 1¾ x ⅜ to ⅝ in....3·5c
1½ to 4 x ⅜ to 1 inch..3·3c	1 & 1¼ x ⅜ to ⅝ in....3·6c
4½ to 6 x ⅜ to 1 inch..3·5c	⅝, ¾ & ⅞ x ⅜ to ⅝ in....3·7c
1¼ to 6 x 1⅛ to 1½ in..3·7c	
Horse Shoes.—	Nail rods........ 7·2c
All sizes........ 4·8c	
Heavy Bands—	⅞ to 1½ x ¼ & 5-16 in...4·3c
3½ to 6 x ¼ & 5-16 in..3·9c	⅞ to ¾ x ¼ & 5-16 in...4·5c
1¾ to 3¼ x ¼ & 5-16 in..4·0c	
Light Bands—	
3 to 6 x 3-16 to No. 12..4·3c	1 to 1¾ x 3-16 to No. 12..5·9c
1¼ to 2¾ x 3-16 to No. 12........ 4·5c	¼ to ⅞ x 3-16 to No. 12..5·5c
Hoops.—2¼ to 3 in....4·6c	1 in........ 5·8c
3¼ to 4½ in........ 4·8c	⅞ in........ 6·3c
1½ to 2 in........ 4·8c	¾ in........ 6·8c
1⅜ to 1 11-16 in........ 5·1c	⅝ in........ 7·3c
1¼ & 1⅛ in........ 5·4c	½ in........ 7·8c

Round and Square.—	
1 to 1⅝ in........ 3·8c	⅜ to 7-16........ 4·0c
2 to 2¾ in........ 3·8c	⅜ in........ 4·1c
3 to 3½ in........ 3·8c	5-16 in........ 4·5c
3¾ to 4 in........ 4·3c	¼ in........ 5·9c
⅝ to 9-16 in........ 3·1c	3-16 in........ 6·9c
Oval Iron.—	
½ to 1½ in........ 3·9c	⅜ in........ 4·8c
⅝ to ⅞ in........ 4·1c	¼ in........ 4·9c
Half Oval and Half Round.—	
½ to 1½ in........ 4·2c	⅜ in........ 5·4c
⅜ to ⅜ in........ 4·7c	¼ in........ 6·9c

	Bolled.	Charcoal.	Jun.
Sheet Iron, 10 to 14........	5·3	6·8	8·3
" 15 to 20........	5·5	7·0	8·5
" 21 to 24........	5·7	7·2	8·7
" 25 to 26........	5·9	7·4	8·9
" 27........	6·1	7·6	9·1

All sheets over 28 in. wide, ½c. ₰ ℔ extra.

Tank Iron—	Heads flanging........ 9·0c
3-16, ¼ & ⅜ in. thick..5·3c	Flow Slabs........ 5·9c
Boiler Plate Iron........ 5·0c	Plow Wings........ 6·4c
Heads not flanging...6·2c	
Railroad Iron—Countersunk and Punched.—	
1⅛ x ⅜, 7-16 & ½ in...4·3c	1½, 1¾ & 2 x ½ & ⅝ in..3·8c
1⅜ x ⅜ & 5-16 in........ 3·3c	1⅜ x ⅝ in........ 4·0c
Extras for Cutting to Length.—	
Flat bars and rounds and squares........ 0·1c	Light bands and wagon box iron........ 0·2c
Flat bars for tire........ 0·1c	Hoops........ 0·5c

The following are the Card rates of Lewis, Oliver & Phillips:
Iron, standard list, assorted sizes, for large orders, 3·8c, card rate, 2 % off net.
Flat Rail (1½x¼), punched and countersunk..4·7c ₰ ℔ net
Iron Wedges........ 5c ₰ ℔ net
Norway Nail Rods........ 9½c ₰ ℔ net
Crow Bars (in ordering please state whether "Wedge" or "Pinch" point)........ 6½c ₰ ℔ net
Beetle Rings........ 9½c ₰ ℔ net
Fence Pickets—
⅜ round, bent to shape, 80c ₰ ft. of fence, less 5 % off net
Discount off Standard List.
Carriage and Tire Bolts (new list)........ 70&5 % off net
Plow Bolts........ 25 % off net
Stove Bolts........ 5 % off net
Machine and Square Head Bolts........ 30 % off net
Coach and Lag Screws........ 30 % off net
Bolt Ends........ 25 % off net
Harrow Teeth, in lots of 1 ton or more, packed in casks, 1 in. diam. 4½c ₰ ℔ net; ⅞, ¾ in. diam. 4½c ₰ ℔ net; ⅝ in. diam. 4½c ₰ ℔ net.
Patent Headed Harrow Teeth, packed in casks, ½c ₰ ℔ ex
Skein Bolts, in bulk, in lots of 1 keg or more, ⅝ in. diam. 7c ₰ ℔ net; 9-16 in. diam. 8c ₰ ℔ net; ½ in. diam. 9c ₰ ℔ net. 1c ₰ ℔ extra when less than 1 keg of each size is ordered.
Screw Hook-and-Eye Hinges, ¾ to 1 in. diam. 9½c ₰ ℔ net; ⅝ in. diam. 10½c ₰ ℔ net; ½ in. diam. 12½c ₰ ℔ net.
Screw and Strap Hinges, in lots of 100 pairs or more, 14 to 16 in. long, 6½c ₰ ℔ net; 8, 10 & 12 in. long, 8c ₰ ℔ net.
Strap and T Hinges..40 % off net, delivered as customary
Screw Hitching Rings........ $5 50 ₰ 100 net
Duck Nest Tuyere Irons........ $15 00 ₰ doz net
Cast Iron Washers........ ₰ ℔ 4½c net
Bridge and Roof Bolts—
1 to 2 in. diam. over 8 ft. long........ ₰ ℔ 4½c net
1 to 2 in. diam. from 4 to 8 ft. long........ " 5 c net
1 to 2 in. diam. from 1½ to 4 ft. long........ " 5½c net
⅝, ¾ and ⅞ in. diam. over 4 ft. long........ " c net
⅝, ¾ and ⅞ in. diam. from 1½ to 4 ft. long " 6½c net

WAGON HARDWARE.

Wagon Box Strap Bolts—

10 in. long by 7-16 at Screw End, ₰ set of 8 bolts..				55c
12 "	½	"	8 "	70c
10 "	9-16	"	8 "	} 90c
12 "	9-16	"	8 "	
14 "	9-16	"	8 "	$1 00
10 in. long by ⅝ at Screw End, ₰ set of 8 bolts..				} 1 00
12 "	⅝	"	8 "	
14 "	⅝	"	8 "	1 10
16 "	⅝	"	8 "	1 20

5c ₰ set for each additional inch over 14 in. All lengths made.
Wagon Box Rods, narrow track, each........ 18c
" wide track, each........ 20c
Single Tree Irons, ₰ set of four pieces........ 38c
Wrought Iron Bolster Plates, 2½ in. wide, ₰ set........ 60c
" " " 3 " " 65c
" " " 3½ " " 70c
" " " 3¾ " " 75c
Wagon Brake Ratchets, each........ 16½c
" " " finished with guard, each..45 c
Wrought Hammer Straps, heavy pattern, each........ 16 c
" " " light " each........ 13½c
" Rub Irons, each........ 11 c
Stay Chain Hooks, each........ 8 c
Double and Single Tree Clips, figure 1, each........ 9 c
" " " " 2, each........ 10 c
" " " " 3, each........ 12 c
Strap Bolts, Rods, Single Tree Irons, Bolster Plates, Brake Ratchets, Hammer Straps, Rub Irons, Stay Chain Hooks and Clips, in lots of 100 sets........ dis 25 %
Wagon Box Staples, 1½ to 2½ in. to clinch. ₰ 1000 $12 50 net
" " Box Iron, to rivet on. ₰ 1000 8 50 net
Neck Yoke Eyes, each........ 5½c net
" " with ⅝ rings, each........ 8 c net
King Bolts, ⅞, 1, 1⅛, and 1¼ in. diam........ ₰ ℔ 4½c net
Wagon Rivets, ex. large, flat, oval and steeple head, ¼ in. diam. all lengths........ " 9½c net
Wagon Rivets, 3-16 in. diam., all lengths........ " 11½c net
" " & Nails, in 5 ℔ paper boxes.... ₰ ℔ 1c extra
" " in 25 ℔ wood " .... ½c extra
Wagon and Hinge Nails, ¼ in........ ₰ ℔ 17 c net
" " 3-16 in........ " 19 c net
Double Tree Plates........ }
Coupling " .... } " 9 c net
Tongue " .... }
Neck Yoke Plates........ " 12 c net
Tongue Cap Iron, 1¾, 2 & 2¼ in. wide, same price ₰ ℔ as Band Iron.
Wagon Chains, Stay Lock and Tongue, 5-16 in, ₰ ℔ 11½c net; ¼ in., 12½c. net

DETROIT.

(Reported by Messrs. Jewett & Root.)

Tin Plate.—Best Charcoal	**Copper.**—
IC, 10x14........ $11 50	Sheathing........ 33c
IX, 10x14........ 14 25	Copper Bottoms........ 36c
XX, 10x14........ 17 00	**Planished Copper.**—
IC, 12x12........ 12 00	Sheathing, 14x48........ 41c
IX, 12x12........ 14 75	Boiler Size, No. 7........ 43c
IC, 14x20........ 12 50	" " No. 8........ 43c
IX, 14x20........ 15 25	" " No. 9........ 43c
XX, 14x20........ 18 00	**Pig Tin.**—Large Pigs..35c
XXX, 14x20........ 20 75	Small Pigs........ 36c
XXXX, 14x20........ 23 00	Bars........ 37c
DC, 100 Plate........ 11 00	**Solder.**—No. 1........ 21c
DX, "........ 13 75	No. 2........ 19c
DXX, "........ 16 50	**Bright Wire**..dis 30% off
DXXX "........ 19 25	**Sheet Iron.**—
DXXXX 100 Plate........ 22 00	No. 18 Am. Com........ 5·55
IX, 14x14........ 24 75	No. 24 Am. Com........ 5·75
IC, 10x14 W........ 11 00	Pat. Am. Russia "A,"
IX, 10x14 W........ 13 75	Nos. 24, 25 & 26........ 14c
Roofing Tin.—Best Char.	Pat. Planished Russia........ 15c
IC, Terne, 14x20........ $11 00	Russia No. 9, 10, 11 & 12..21½c
IX, " 14x20........ 13 75	W. D. WOOD'S & CO.'S SHEET IRON.—
IC, Terne, 20x28........ 24 00	Nos. 15 to 20 Smooth $7 05
IX, " 20x28........ 26 50	" 21 to 24........ 7 25
Coke Tin.—	" 25 & 26........ 7 45
IC, 10x14 Coke........ $9 50	" 21 to 21 Char'l........ 8 75
IX, 10x14, Coke........ 12 25	" 25 & 26 " 8 95
IC, 14x20, "........ 10 50	

Sheet Zinc.—Any width........ 10½c

CINCINNATI.

Reported by Sellew & Co., Importers and Jobbers Metals, No. 214, 216 and 218 Main street.

Tin Plate.—I. C. 10x14 Charcoal........ $13·50 @ 14·50
I. C. 10x14 best Coke........ 12·00 @ 13·50
I. C. Terne, 14-20........ 12·00 @ 18·00
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Lead.—Pig..₰ ℔ 7½c @ 8c.	Bar........ ₰ ℔ 8c @ 9c
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Ingot........ ₰ ℔ 30c @ 31c	Brazier, 6 to 9 lb... ₰ ℔ 46c
Planished..... " 51c @ 58c	" 10 to 14 lb... " 43c
Sheathing.. " 44c @ 46c	" 14 to 100 lb.. " 40c
Bolt........ " 40c	Copper Bottoms........ " 40c

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Case, 100 lbs........ " 11½c
Slab........ " 8½c @ 9c

Brass.—	Roll, No. 38 to 40........ ₰ ℔ 50c
Roll, No. 6 to 30. ₰ ℔ 48c	Wire, No. 0 to 20... ₰ ℔ 50c
" 30 to 38. " 65c	" 20 to 45........ " 60c
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Sellew & Co........ ₰ ℔ 35c	Market........ " 15c

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Bismuth........ ₰ ℔ $6 00
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Russia........ ₰ ℔ 20c @ 22c	" " B.. 13 @ 14c

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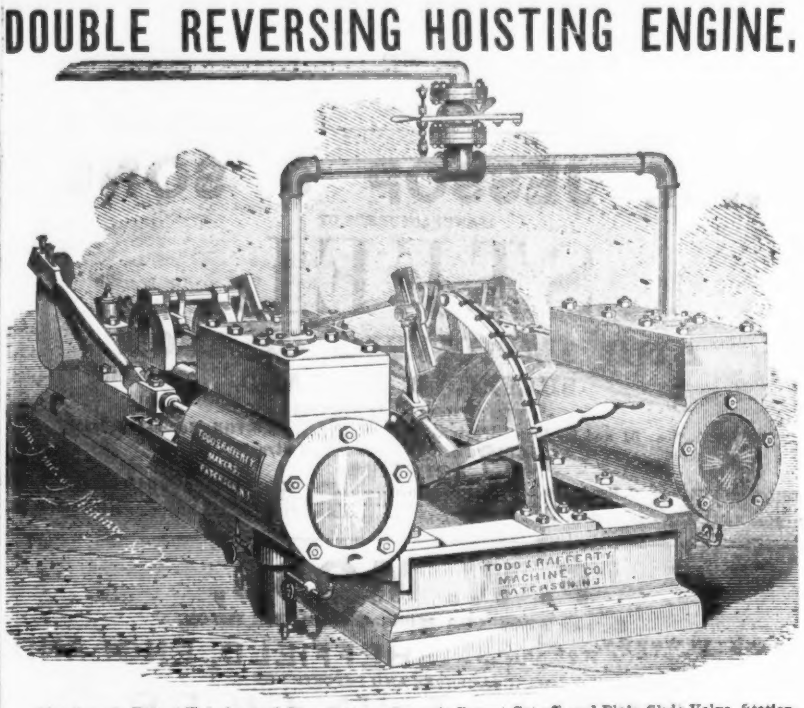

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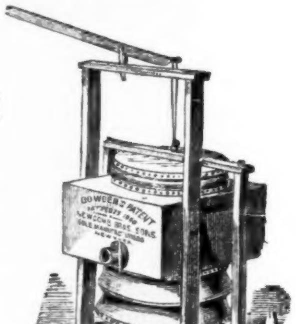

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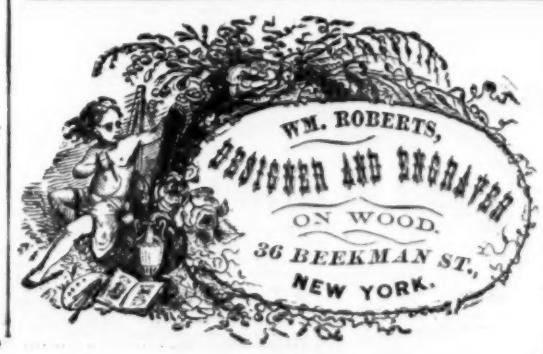

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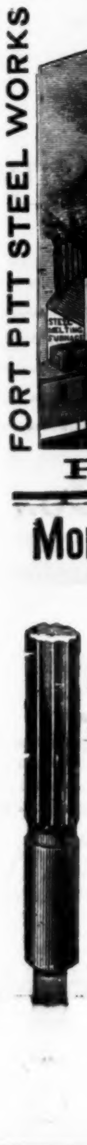

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" Polished " ... " 13 00
Smith's " " B. S. L. H. Rd. Pt. ... " 13 50
" " " B. S. D. H. Rd. Pt. ... " 14 00
Ames' Black Spades ... " 16 00
" Polished " ... " 17 00
" Patent " ... " 17 50
Alling " " ... " 15 50
Crane's Black " ... " 12 50
" Polish'd " ... " 13 50

Scoops.—Alling Steel Polished, No. 2 ... ₩ doz, $13 50
Alling Steeled Polished, No. 3 ... " 14 00
" " No. 4 ... " 14 50
" " No. 5 ... " 15 50
" " No. 6 ... " 16 50
" " No. 7 ... " 17 50
" " No. 8 ... " 18 50
" " No. 10 ... " 21 50
Crane's Polished, No. 5 ... " 13 50
" No. 6 ... " 14 50
" No. 7 ... " 15 50
" No. 8 ... " 16 50
Crane's Black Coal, No. 4 ... " 17 50
" " No. 5 ... " 18 00
Preston, Black Scoops No. 1 ... " 12 00
" " No. 2 ... " 12 50
" " No. 3 ... " 13 00
" Half Pol. Scoops No. 1 ... " 12 50
" " " No. 2 ... " 13 50
" " " No. 3 ... " 14 50
Lippincott, Half Pol. No. 2 ... " 15 00
" " No. 3 ... " 16 00

Wrenches.—Taft's ... dis 60 %
Coe's Imitation ... dis 50 %
Coe's Genuine ... dis 30 %

Wringers.—Novelty Clothes Wringer ... ₩ doz $72 00
Universal Clothes Wringer ... " 72 00

Chicago Metal Market.

(Reported by Cragin Bros. & Co., 141, 143, and 145 Lake St.)

Tin Plate.—

IC, 10x14, Coke	$11 00	IXX, 14x20, Charcoal	19 00
IC, 10x14, Charcoal	12 00	IXXX, 14x20, "	22 00
IX, 10x14 "	15 00	IXXXX, 14x20, "	25 00
IC, 12x12, "	12 50	IX, 14x14, "	26 50
IX, 12x12, "	15 50	DC, 100 Plate, "	12 00
IC, 14x20, "		DX, "	15 00
IX, 14x20, "	16 00	DXX, "	18 00
		DXXX, "	21 00

IC, 14x20, Coke Roofing ...
IC, 10x20, Coke, for Gutters ... 19 00
IC, 14x20, Charcoal Roofing ... 11 50
IX, 14x20 " ... 14 50
IC, 20x28, ... 24 00
IX, 20x28, ... 29 00

Pig Tin.— | Small, 30 lb ... 41c
Large, 60 lb ... 40c | Bar Tin ... 42c

Zinc.—
In casks 1000 lbs ... c | In sheets ... 11 c
" 500 " ... 10½c | Slab ... 9c

Copper.—Copper Bottoms ... 37c
Sheathing Copper ... 36c
Planished Copper, 14x48 ... 46c
Size, 14x52, 14x56, 14x60 } Planished Copper ... 48c
Nos 7 8 9

Braziers' Sheets, 30x60.—6 to 8 lbs ... 46 c | 15 to 100 lbs ... 40c
10 and 12 lbs ... 48c | Ingot Copper ...
Solder.—Extra Fine, C. | Bolt " ... 45c
B. & Co.'s Brand ... 35c | Ordinary, No. 2 ... 21c
Fine, No. 1 ... 28c | Plumbers' Solder ... 23c
| Braz'rs' or Spelt'r Solder 35c

Antimony ... 20c
Babbit Metal ... 15c @ 25c.
Galvanized Iron Conductor Pipe ... ₩ lb 10c

Sheet Iron.—

	Common.	Smooth.	Charcoal.
No. 14 to 24	5¾c	6¾c	8¾c
25 & 26	6 c	7 c	8¾c
27	6¼c	7¾c	9 c

Add ½c ₩ lb for 30 in. wide.

Galvanized Iron ... dis 25 %
No. 16 to 20 ... 15c | No. 27 ... 18c
21 to 24 ... 16c | 28 ... 20c
25 & 26 ... 17c |

Russia Iron.— | No. 1 Stained ... 20c
Perfect ... 22c | In Sheets, 1c. higher.
American Russia.— | B ... 11c
A ... 14c | In sheets, 1c higher.
Lead.— | Lead Pipe, in full coils 10¾c
Pig ... 8¾c | Lead Pipe, when cut, 11c
Bar ... 10c | Sheet Lead ... 10¾c

BOSTON.

(Reported by Macomber, Bigelow & Dowse, 42 to 48 Batterymarch St.)

Anvils.—Eagle, ₩ lb 11c. currency ... dis 15 @ 15&5 %

Axes.—Forester's Favorite, Bronzed ... $13 00
Blue Jackets, Blue ... 12 50
Chopper's Pride, Bronzed ... 11 00
Red Cross, Red ... 10 50
Red Cross, Handled ... 13 50
Boy's Handled Blue Jackets ... 12 00
Hunts Axes ... ₩ doz $15 @ 17 50 net @ 5 %
" Hatchets ... net
Shingling Nos. 1, 2, 3 ... ₩ doz $7 25 8 00 8 75
Claw " 1, 2, 3 ... " 7 75 8 50 9 25
Lathing " 1, 2, 3 ... " 7 50 8 25 9 00

Axe Handles.—Hickory, Fisher Pat. No. 1 ₩ doz $2·75
Hickory, Fisher Pattern ... " 2 " 2·00
Oak, " " ... " 1 " 2·75
" " " ... " 2 " 2·00
" " " ... " 3 " 1·50

Bells.—Hand ... dis 60&10 %
Sleigh, fancy body straps, patent leather, cloth bound, W. M., 30 bells, No. 1 ... per strap $1 70
Sleigh, patent leather, cloth bound, W. M., 36 bells, No. 1 ... per strap, $1 80
Sleigh, patent leather, leather bound, ex. tinned, 30 bells, No. 1 ... per strap $2 38
Sleigh, patent leather, leather bound, ex. tinned, 36 bells, No. 1 ... per strap $2 50
Sleigh, patent leather, leather bound, silver plated, 30 bells, No. 1 ... per strap $3 38
Sleigh, patent leather, leather bound, silver plated, 36 bells, No. 1 ... per strap $3 50
Sleigh, shaft straps, W. M., House. 6 bells, No. 1, ... per pair 55c @ 65c

Bolts.—Carriage. Phila., "Girard Works ... dis 50 %
Borers.—Angle. Backus ... dis 30 %
Boring Machines.—Angle ... each $5 25
Common. Snell's quality ... each 4 00
Breast Drills.—Miller's Falls, $30 per doz ... dis 25 %
Braces.—Barber's ... dis 40 %
Backus' ... dis 50 %
Spofford's ... dis 40 %

Butts.—Union Drilled Loose Joint ... dis 45 %
" " Wire Fast Joint ... dis 35 %
" " Acorn Loose Joint ... dis 40 %
Alden's Drilled Plain, Reversible ... dis 35 %
" " Acorn, " ... dis 35&10 %
Brass Butts ... dis 25 %
Wrought Table Butts and Back Flaps ... dis 25 %
Wrought Narrow Butts ... dis 30 %

Carriage Jacks.—Young America ... ₩ doz $21 00
Cartridges.—"U. S. Cartridge Co." ... dis 50 %
Chisels.—
Socket Framing M., B. & D's, warranted ... dis 60&10 %
Cordage.—Manila ... ₩ lb, 16¾c
American Tarred Hemp Lath Yarn ... ₩ lb, 10c

Cow Ties.—
No. 30, open ring, 3 ft., No. 6, with toggle ... ₩ doz $3 37
No. 35 " 3 ft., No. 6 " snap ... ₩ doz 3 62
No. 40 " 3½ ft., No. 5 " toggle ... ₩ doz 3 75
No. 45 " 3½ ft., No. 5 " snap ... ₩ doz 4 00
No. 50 " 4 ft., No. 4 " toggle ... ₩ doz 4 25
No. 55 " 4 ft., No. 4 " snap ... ₩ doz 4 50
No. 60 " 4½ ft., No. 3 " toggle ... ₩ doz 4 50
No. 65 " 4½ ft., No. 3 " snap ... ₩ doz 5 00

Crow Bars.—Iron. Steel Points ... ₩ lb, 6¼c
Door Springs.—Stimson's Patent.—
No. 7, Light inside doors, $12·00 ... dis 25 %
No. 8, " outside " $18·00 ... dis 25 %
Torrey's ... $4·00
Files.—Earl Smith & Co.'s English ... $5 to £ gold
American ... $5 to £ currency, less 10 %
Nicholson ... $5 to £ currency, less 10 %
Funnel Irons.—$2·50 $2·50 $2·50 $3·25 per doz
5, 5½, 6, 7 inch
Deep Flange, $3·50 $3·75 $4·00 per doz
5, 5½, 6 inch
Gauges.—Star Tool Co. ... dis 33⅓ %
Hammers.—Maydole ... dis 5 %
M., B. & D., solid cast steel, adze eye, No. 1, $10; 1½, 8·75
" " " " " bell face, No. 1, $11; 1½, $9·75.
Hangers & Rollers.—Novelty ... dis 30 %
Hatchets.—Underhill Edge Tool Co. ... dis 10 %
Underhill pattern, solid, C. S. lathing ... $9 50
Hinges.—Strap and T, Stanley Works ... dis 30&7½ %
Plate, Loose, and Fast Joint ... ₩ lb, 8c
Wrought Screw Hook ... ₩ lb 8c
Locks.—P. & F. Corbin ... dis 40 %
No. 408, Iron Face and Bolts, Mortise, 3½ inch, per doz net ... $1 88
No. 1000. reversible rim knob ... $2 25
Mattocks.—K. P. & Co., axe finish, long cutter ... $13 75
Short cutter ... 13 50
Meat Cutters.—"Miles'," ... dis 20 %
No. 1, $22; No. 2, $30; No. 3, $40 per doz.
American. $6 each ... dis 25 %
Metal.—Babbitt, No. 1, 35c; 2, 25c; 3, 16c; 4, 15c ₩ lb
Nails.—10d and larger ... $4 75
Paper.—Finest Quality Manila ... ₩ lb 11c
Parers.—Reading, New Pattern ... per doz $8 00
Turn Table ... per doz 8 50
Picks.—K. P. & Co., Polished Points—
5 to 6 ... per doz $10 00; 6 to 7, $10 50
Pulleys.—Clark & Co.'s Axle, 1½ in.—
... per doz 37c.; 2 in., 42c
No. 115, Axle, 1½ in ... per doz 37c
Plated Ware.—Rogers Bros. ... new list dis 30 %
Plumb & Levels.—"Davis" Pat. Adjust. ... dis 50&10 %
"Davis" Pat. Adjustable Inclinometer, wood and iron ... dis 33⅓ %
Pocket Knives.—Conn. Cutlery Co. ... new net list
Rivets.—Black ... dis 25 %
Carriage, oval head, Nos. 3, 4, 5, 6, 7, 8.
13 13 14 14 15 16c ₩ lb net
Sad Irons.—Reading ... ₩ lb 4½
Sand Paper—0 to 2, $4·25; 2 to 3, $4·75 ... dis 10 %
Saws.—Disston's ... dis 12½ %
Lightning X cut, Boynton's ... per foot 6½c
" Saw Blades, 32 inch ... per doz $7 00
" Framed Saws ... per doz $9 00
Common " " ... per doz 6 00
Disston " " ... per doz 9 00
One man X cut.—Lightning ... $2 75 each
Disston's $3·00 each ... dis 12½ %
W. M. & C. "Handy" Framed Saws ... ₩ doz $13 50
Scythe Stones.—
"Willoughby Lake," first quality ... ₩ gross $6·50
" " second quality ... " 3·00
Saw Clamps.—Reading ... $11·25
Screws.—American Screw Co. ... new list dis 52½ %
Shovels.—O. Ames ... new list dis 12½ %
M. B. & D. ... new list dis 12½ %
Snow, malleable iron tip, D handle ... $6·50
" " " plain ... 5·50
Carr's Iron, Black Strap ... Black, $5·50; Polished, $6·50
Collins, C. S. ... $8·00
Sifters, Coal.—McMasters ... $12·00
Sinks.—Cast Iron, 2, 2½, 3, 3½, 4, 4½ feet.
$1·37 $1·62 $2·25 $2·75 $3·75 $4·75 each.
Tools.—Aiken's Pattern, 20 in set; Miller's Falls, $12·00 per doz ... dis 15 %
Traps.—Oneida ... dis 20 %
Blake's ... dis 20&5 %
Vises.—K. P. & Co.'s Solid Box, Blacksmith ... ₩ lb 15½c
Parker's Parallel ... dis 5 %
Backus ... dis 25 %
"Howards," Parallel ... dis 10 %
Fisher & Norris' Double Screw Paral'l ... dis 15 @ 15&5 %
Weights.—Window Weights ... ₩ lb 2½c
Wrenches.—Coe's Genuine Wrenches ... dis 40 %
Wringers.—
Novelty and Universal } Tub No. 2 } less than 5 doz ... ₩ doz $72 00
5 doz ... ₩ doz 69 00
10 doz ... ₩ doz 67 00
Monitor, Double Cogs ... per doz 66·00
Novelty Bench, No. 4, } less than 5 doz ... ₩ doz 108 00
5 doz ... ₩ doz 104 00
10 doz ... ₩ doz 101 00
Zinc.—Sheet ... ₩ lb 10¾c

Boston Metal Market.

(Corrected by Fuller, Dana & Fitz.)

Tin Plates.— ₩ box | I. C. Coke ... @ $11 00
I. C. Charcoal ... @ $12 00 | " Terne ... 11 00 @ 12 00
Pig Tin.— ₩ lb | Straits ... 32c
Banca ... 39c | English ... 32c
Copper.— ₩ lb | Bolt ... 35c
Sheathing ... 33c | Ingot ... 26c
Lead.— ₩ lb | Sheet and Pipe ... 9c
Spanish Pig ... 7½c |
Spelter ... ₩ lb 9c
Zinc.—Sheet ... ₩ lb 10½c
Antimony ... " 17c
Iron.—Sheet Iron, Russia ... " 20c
Sheet Iron, English ... " 6½c
" " American ... " 8½c
" " Galvanized ... " 12½c
Swedes Bar Iron, Flat, gold ... ₩ ton, $145 00 @
" Shoe Shapes, gold ... 150 00 @
Norway Bar Iron, Flats, gold ... 145 00 @
" Shapes, gold ... 160 00 @
" Round, 2 in. to ⅜ in., gold ... 145 00 @
" " 11-16 to ⅜ in. " ... 157 50 @
" " 5-16 to ¼ in. " ... 160 00 @
" Nail Rods, Rolled " ... 177 50 @
" " U. B. " ... 172 50 @
" " Benzon " ... 167 50 @
" " Vasa " ... 160 00 @
" " N I W " ... 157 50 @
English Refined Bar Iron ... 75 00 @
Scotch Pig Iron ... 46 00 @ 50 00
American " ... 38 50 @ 36 50
Wrought Scrap Iron ... 36 00

Steel.— ₩ lb | German ... 1c
Eng. Tool ... 18c | Spring ... 8½c
American Tool ... 15½c | Tire ... 7½c
" Mach ... 11c | Sleigh Shoe ... 5½c
Bessemer ... $ c @ 9½c | Toe Calk ... 9½c

ST. LOUIS.

Corrected weekly by Semple, Birge & Co.

Anvils.—Armitage ... ₩ lb, gold, 16c
Peter Wright's ... " 14c
Wilkinson's ... " 12½c

Apple Parers.—Conqueror ... ₩ doz, $9 00
Lightning ... " 9 00
Turn Table ... " 9 00

Augers and Bits.—Cook's ... dis 25 %
Ives' ... dis 20 %
Jennings' ... dis 5 %
Snell's ... dis 12½ %

Axes.—Hunt's ... ₩ doz $14 00 @ 15 00
Lippincott's ... " 13 50 @ 14 50
Lippincott's Pioneer ... " 14 00 @ 15 00
Simmons' ... " 13 00 @ 13 50

Axles.—Kritch & Crane Mfg. Co.'s—
Patent Taper Axles ... dis 10 %
Swelled Taper Axles ... dis 10 %
Concord Axles ... dis 10 %
Red Jacket Axles ... dis 10 %
Common Axles, 1½ inch and upward ... ₩ lb, 8¾c
" " less than 1½ inch ... " 9½c

Bells.—Troy, Church ... ₩ lb, 50
Light Brass, Hand ... dis 50 %
Moore's, Cow ... dis 10 %

Bolts.—Arms, Bell & Co.'s Machine ... dis 10 %
Arms, Bell & Co.'s Carriage and Tire ... new list dis 70 %
Norway Iron Carriage and Tire ... dis 40 %
Cast Iron Barrel, Shutter, &c ... dis 25 %

Cast Butt Hinges.—Narrow Fast Joint ... dis 35 %
Broad Fast Joint ... dis 40 %
" Loose " ... dis 50 %
Reversible ... dis 45 %
" Japanned and Silver Tipped ... dis 45 %
Loose Joint "Acorn" " " ... dis 40 %
Excelsior Reversible Blind ... dis 30&10 %
Lull & Porter's Blind ... dis 4[illegible] %

Wrought Butts.—Narrow ... dis 20 %
Reversible ... dis 25 %
Broad ... dis 25 %
Table Hinges ... net list
Back Flaps ... net list
Inside Blind Hinges ... net list

Chain.—Eng. Coil ... 3-16 ¼ 5-16 ⅜ 7-16 ½ in.
13 11 10 9½ 9 8c gold
Trace ... 6½-10-2 70c "
7-10-2 75c "
German Coil and Halter ... new list net "
American Coil—Short Link.
Size, inches ... ⅜ 7-16 ½ 9-16 ⅝
Price cents ₩ lb ... 12½ 12½ 10½ 10 9½ net
Size, inches ... 11-16 ¾ 13-16 ⅞ 15-16
Price, cents ₩ lb ... 9½ 8¾ 8¾ 8¾ 8¾ net
Size, inches ... 1 1 1-16 1⅛ 1 3-16 1¼
Price, cents, ₩ lb ... 8½ 8½ 8 8 7¾ net
All larger sizes same price as 1¼ in. Stud chain 9 less than same size close link.

Chisels.—Socket. Firmer or Framing ... dis 55 %
Clothes Wringers.—Crown ... ₩ doz $60 00
Novelty ... " 72 00
Universal ... " 72 00
Monitor ... " 72 00
Corn Knives.—Dunn E'ge T'ol Co.'s Clip ... ₩ doz $5 75
Disston's ... " 6 00
Crow Bars.—Steel Pointed ... ₩ lb 8 @ 10c
Solid Cast Steel ... 20c
Cutlery.—J. Russell & Co.'s ... } new list, dis 20 %
Lamson, Goodnow & Co.'s ... }
Landers, Frary & Clark's ... }

Files and Rasps.—
Nicholson's Mill Files ... $6 50 to the £, currency
Nicholson's Other Files ... 5 00 to the £, currency
Butcher's Files ... 7 00 to the £, currency
Heller's & Bros. Horse Rasps ... 5 25 to the £, currency

Forks and Hoes.—
Auburn Mfg. Co.'s Hay and Manure Forks ... dis 25 %
" " Handled Hoes ... dis 25 %
" " Planter Eye Hoes ... add 10 %
Winsted's Planter Eye Hoes ... add 10 %

Hammers.—Yerkes & Plumb ... new list net
Masons' Hammers ... ₩ lb 20c
Smith Hand Hammers ... " 22c

Handles.—Axe ... Extra. No. 1. No. 2. No. 3.
$2·75 $2·25 $1·75 $1·00
Pick ... Extra. No. 1. No. 1½. No. 2.
$2·50 $2·00 $1·75 $1·25
Smith & Montross Fork, Hoe and Rake ... dis 20 %
" " Broom and Mop ... $12 @ $18 ₩ M.

Harrow Teeth.—1 inch iron ... ₩ lb 4½c
¾ and ⅞ inch iron ... " 4¾c
⅝ inch iron ... " 5 c
Barbed or Headed ... ½c extra

Hatchets.—Hunt's ... net list
Simmons' ... dis 10 %

Hay Knives.—Lightning ... ₩ doz $22 00
Dunn Edge Tool Co.'s ... ₩ doz $14 50—dis 15 %
Fisher's ... " 16 50—dis 10 %

Hinges.—Strap and T—St. Louis make ... dis 25 %

Horse Nails.—Eureka ... 23c rates
Ausable ... 22c "
Northwestern ... 22c "
Eagle ... 19c "
National Patent Pointed ... 21c "
" " Extra Finished ... 23c "

Horse Shoes.—R. I. (Perkin's pat.) ... ₩ keg $6 75
Burden's ... " 6 75
Mule Shoes ... $1 00 extra
Rhode Island Trotting Shoes ... 2 50 "

Ice Tools.—W. T. Wood & Co.'s ... net

Locks and Latches.—
Jones & Nimick's ... revised list dis 20 %
Moorhead, Adams & Co. ... revised list dis 25 %
Norwalk Lock Co.'s ... revised list dis 10 %

Mattocks and Grub Hoes.—
Klein, Logan & Co.'s Mattocks ... ₩ doz. $15 00 @ 16 00
" Grub Hoes, Oval Eye ... ₩ doz. 12 00 @ 13 00

Nails.—Wheeling ... $4 50 rates.
Orders for 100 kegs 10c ₩ keg less.

Picks.—Klein, Logan & Co.'s R. R. and Clay ₩ doz. $12 00
Klein, Logan & Co.'s Coal ... " 9 75
" " Poll ... " 12 00
" " Stone ... " 16 50
" " Tamping ... " 19 00

Planes.—Ohio Tool Co.'s ... dis 15 %
Eastern ... dis 20 %

Post Hole Augers.—Clark's Patent—
No. 1, ₩ doz. $27; No. 2, $30; No. 3, $32 ... dis 20 %
Barton's Patent ... ₩ doz $25—dis 20 %
Vaughn's " ... " 25—dis 10 %

Sad Irons.—Monitor Brand. Silver Polished ... ₩ lb 5c

Sash Weights.—Standard Solid Eyes ... ₩ lb 3½c

Saws.—Disston's ... dis 10 %
Spear & Jackson's ... $5 00 to £ gold
Hubbard, Lippincott, B. & Co.'s ... dis 10 %
Branch, Crooks & Co.'s ... dis 10 %
Livingston's Patent Buck ... net list

Screws.—American Screw Co.'s revised list ... dis 45 %
$2000 worth in 6 months ... 2½ % extra

Scythes.—Blood's C. S. & G. S. ... net list
Dunn Edge Tool Co.'s ... new list dis 25 %
Paris Furnace Co.'s ... dis 25 %
Waldron's English ... $10 00 to £

Scythe Stones.—No. 1 Ind'n Pond ₩ gr's, $7 00 }
Extra Indian Pond ... " 7 50 } dis 25 %
Premium ... " 9 50 }
Diamond Grit ... " 13 50 }

Shovels, Spades and Scoops.—
Ames' ... revised list dis 7½ %
Lippincott's ... new list dis 10 %
Rowland's, Maxwell ... revised list dis 12½ %

Sledges.—Smith's Stone or Coal Sledges—
Steel Face Polished ... ₩ lb, 17c
Solid Cast Steel ... " 25c
Striking Sledges ... ₩ lb extra, 1c

Snaths and Cradles ... dis 25 %

Springs.—Cleveland Spring Co.'s—
Carriage and Express ... dis 5 %
Blue Seat Springs ... new list dis 10 %

Tacks.—Norway Tack Co.'s ¼ weight ... dis 67½ %
Brads ... dis 50 %

Thimble Skeins.—Pump & Skein Co.'s ... dis 50 %

Traps.—Newhouse Patent ... dis 15 %
Reichard's Animal, Metal Bottom ... ₩ doz $12 00

Vises.—Solid Box ... ₩ lb 15c
Wilson Mfg. Co.'s ... dis 15 %

Wrenches.—Coes' Genuine ... dis 30 %
Coes' Pattern ... dis 40 %
Taft's ... dis 50

St. Louis Metal Market.

(Corrected Weekly by Messrs. R. Sellew & Co.

Tin Plate.

IC, 10x14, Charcoal	$12 00	IC, continuous, 20 in. x 200 ft	
IX, 10x14, "	15 00	IX, continuous, 20 in. x 200 ft	
IC, 12x12, "	12 50		
IX, 12x12, "	15 50		
IC, 14x20, "	13 00	IC, 10x14, best Coke	$11 00
IX, 14x20, "	16 00	IC, 10x14, good "	10 50
IC, 14x20, Terne	11 50	IC, 10x20	15 50
IX, 14x20, "	14 50	IC, 14x20	11 00
IC, 20x28, "	25 00	IC, 14x20, Coke Lead	12 00
IX 20x28, Terne	30 00		

Block Tin.
Large Pigs ... 35c | Bars ... 37c
Small " ... 36c |

Sheet Zinc.
Casks ... ₩ lb 10c | Sheet ... ₩ lb 10½c

Solder.
No. 1, Refined, in bars or plate ... 23
No. 2, " " " ... 21
Pig Lead ... 8c

Sheet Copper.—18 to 100 lbs. Sheets 30x60 ... 36c
14 to 16 lbs., Sheets 30x60 ... 36c
10 to 12 lbs., " and 20x72 ... 38c
6 to 9 lbs., " ... 41c
Tinned, 14 and 16 oz. 14x48 ... 36c
Planished, 14 and 16 oz. 14x48 ... 41c
" No. 7, 8 and 9 ... 43c
Copper Bottoms ... 37c

Sheet Iron.—

	Com'n	Sm'th.	Char'l. J'an
No. 16 to 20	5¾c	6¾c	8½c
No. 22 to 24	5¾c	6¾c	8¾c
No. 26	6c	7c	8½c
No. 27	6¼c	7½c	8¾c

Galvanized Iron ... dis 25 %
Iron Rivets ... dis 20 %
Iron Wire ... dis 30 %
Coppered Market Wire ... dis 20 %
Copper Rivets and Burs ... dis 10 %
Russia Iron.—Nos. 9, 10, 11 and 12, ₩ lb ... 22c
No. 1, stained, ₩ lb ... 20c
Imitation Russia, ₩ lb ...

Machinery, &c.

Woodruff Iron Works,

HARTFORD, CONN.,

Office, - - - - - - No. 223 State Street.

Manufacturers of the Celebrated

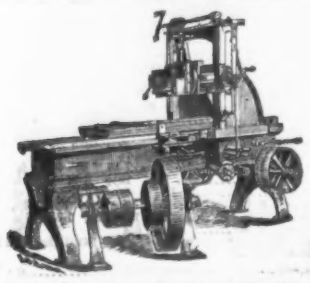
WOODRUFF & BEACH STEAM ENGINE,

With Recent Improvements.

STEAM BOILERS

Constantly on hand, and made to order—of any size or style. Special attention given to all kinds of

MILL MACHINERY & CASTINGS.



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Of excellent designs and workmanship, complete, with best modern attachments, Gun and Sewing Machine Machinery and Fixtures in great variety, Friction Clutch Pulleys,

Water-Power Organ Blowing Apparatus, Special Machinery, &c., made by

THE PRATT & WHITNEY COMPANY, Hartford, Conn.

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SHAFTING & MILL GEARING, a specialty.

Pivot Bridges.

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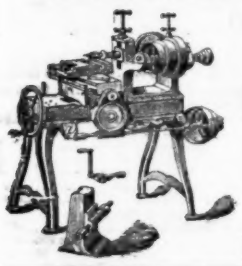
LINCOLN'S MILLING MACHINES.



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GEO. S. LINCOLN & CO.

HARTFORD, CONN.

Machinists' Tools,

AND

LINCOLN'S FRICTION CLUTCH PULLEYS.

Fairmount Machine Works,

Office, 2106 Wood St., Philadelphia, Pa.

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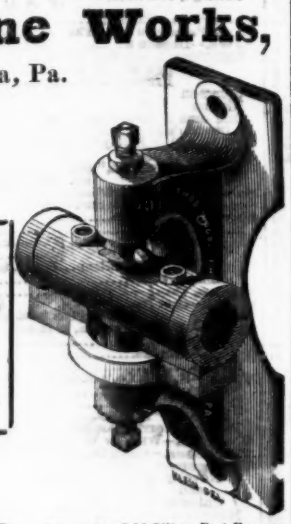
HOISTING MACHINES

WITH OR WITHOUT

CAGE AS REQUIRED.



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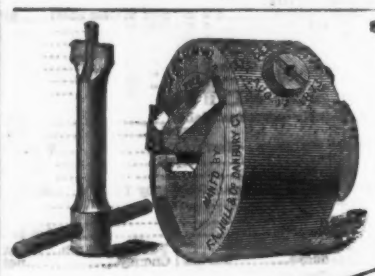

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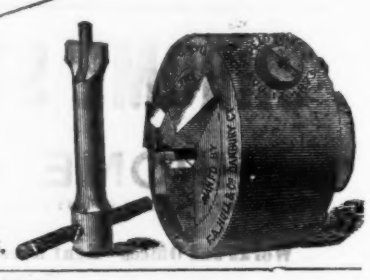

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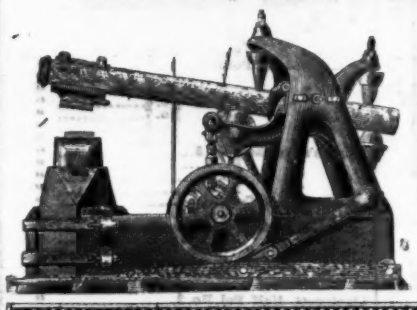

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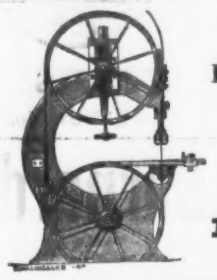

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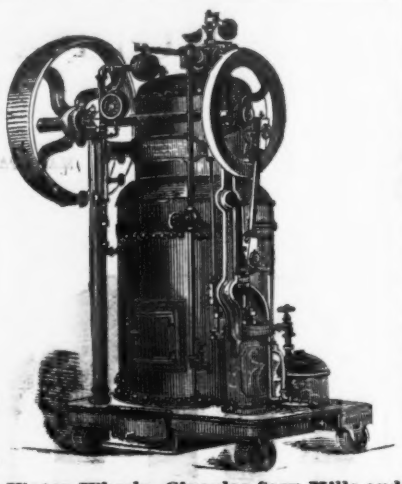

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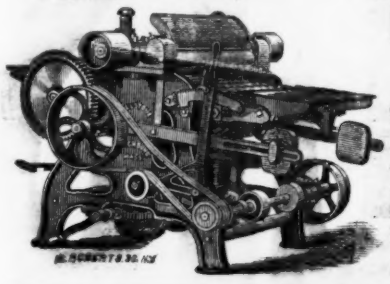

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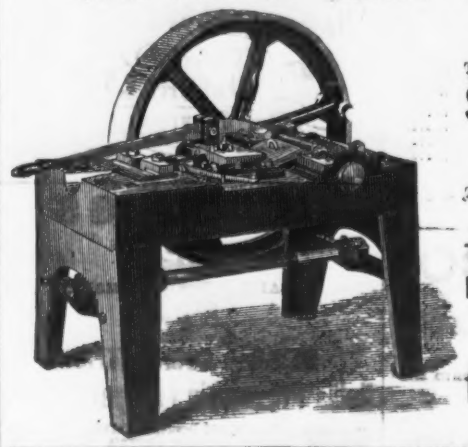

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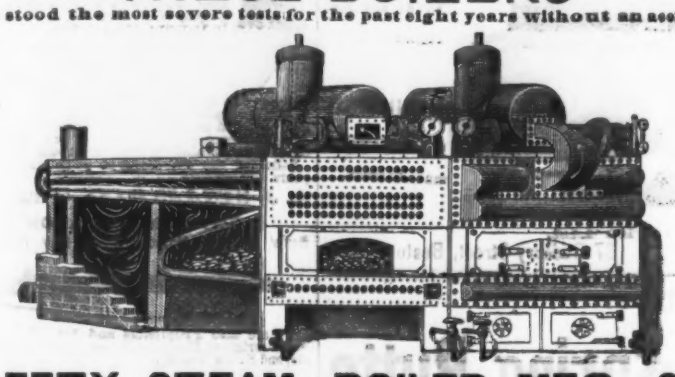

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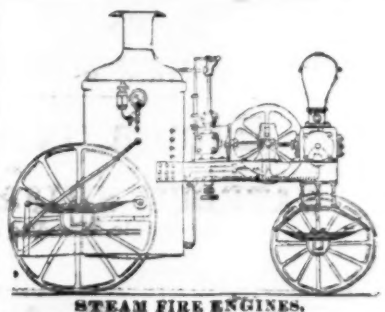

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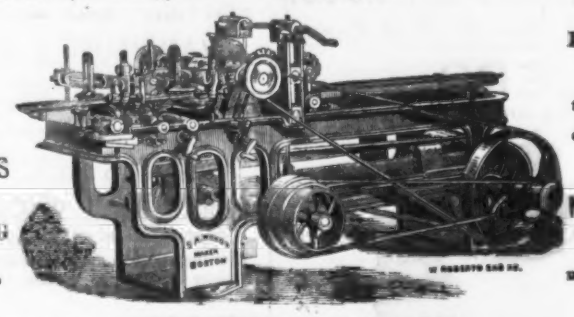

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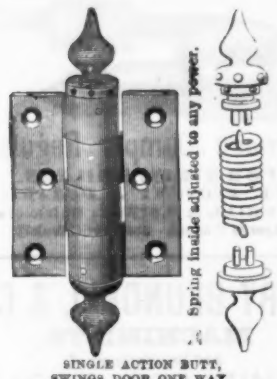

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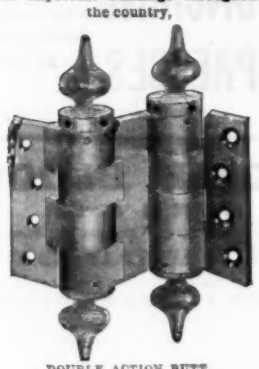

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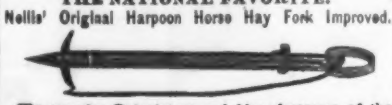

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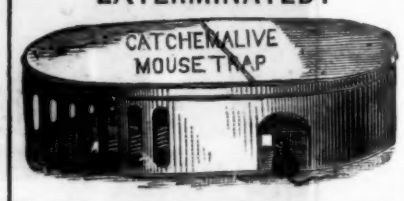

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